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NEWS IN BRIEF

Xerox after Microdata?

THE mystery suitor for US minicomputer Microdata has still not been unmasked, but UK sources name Xerox and IIT as prime candidates. If Xerox is interested, it will represent an ironic about-turn for the company, which closed down its Xerox Data Systems operations in 1975, and subsequently passed the base on to Honeywell.

Xerox Data Systems manufactured and marketed a highly-regarded minicomputer, the Xerox 530. The growing interest at Xerox in the automated office market makes an in-house minicomputer capability particularly desirable.

WP software

A SOFTWARE package supporting word processing on the IBM System/34 has been developed by Gordon Brownhill Computer Services, of Warrington. The system caters for mixed upper and lower case printing, in conjunction with an IBM-supplied 96-character print belt.

Doctor's authority

TO oversee controls on medical records, a doctor should be included in any Data Protection Authority that is set up, according to a resolution passed at the British Medical Association annual meeting. The doctor should be a clinician in active practice, as distinct from someone working in, say, community medicine. It was agreed, and he should have experience of computers.

German group

GROWING interest in BCPL in the German-speaking lands has led the University of Regensburg Computer Centre to organise a BCPL users meeting in Regensburg, West Germany, for July 12. Given sufficient interest, a German BCPL user group will be formed to complement the similar UK group formed earlier this year (Software File, March 15).

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Honeywell denies pull-out from CII-HB

FIRMLY squashing growing speculation in Paris that moves are afoot to increase the French shareholding in CII-Honeywell Bull, Honeywell says its stake in the jointly-owned company is not for sale.

"Honeywell considers its 47% ownership of CII-HB an excellent investment and has no intention of reducing its share," a spokesman at corporate headquarters in Minneapolis told Computer Weekly.

Speculation has arisen because industrial conglomerate St Gobain Pont-A-Mousson is actively seeking a stake in CII-HB, either directly or through Compagnie des Machines Bull, the French company which holds 53% of the shares in CII-HB.

Since Honeywell has firmly ruled out the

first option, adding that it is not in any way involved in the St Gobain negotiations, all that is possible is a restructuring of the existing shareholdings in CMB.

Of the total 60% is held by the public at large — and St Gobain could try to acquire some of these. Another 20% is held by the French state directly, and is almost certainly not for sale. The remaining 20% is held by another holding company, Opagex, in which the big French electrical and electronic combine CGE has 51% of the shares while a consortium of banks holds the remainder.

There has been speculation that CGE might be prepared to sell its stake to St Gobain. Although CGE is understood to be

dissatisfied with the direction CII-HB has been taking, this seems unlikely.

Since the merger between CII and Honeywell Bull in 1976, CII-HB has succeeded in turning itself into a very broad-based company with an identity distinct from that of Honeywell. Major decisions taken in France include the acquisition of 60% of microcomputer pioneer R2E, the establishment of a joint company with systems house SESA for the implementation of complex large-scale computer projects, and a decision to seek acquisitions in the office automation field.

A broader spread of Honeywell computers is now manufactured or assembled in France than in any other country, including the US.



Distributed processing has been introduced at the Central Electricity Generating Board, North West Region, in the form of a CMC Sovereign multiple processor keying system. As well as being used for data entry to the board's IBM mainframes, the Sovereign will carry out critical path analysis, work planning, and plant reliability studies.

Lloyds pay out huge sums on leasing policies

UNDERWRITERS at Lloyds of London are having to pay out considerable sums as a result of claims under the controversial "J" policies written for third party lessors of IBM equipment in the US, although the corporation said that no firm of underwriters would be faced with "an individual claim of any great magnitude".

Earlier this year Lloyds estimated that the claims under these policies would total about \$200 million, but industry sources have said it could be considerably more. The biggest user of the policies, Ite, is understood to have claims of more than \$100 million outstanding.

There are 17 third party lessors with "J" policies in the US, and Lloyds said the claims were being borne by 60 firms of underwriters and several other insurance companies.

The claims started to come in in 1977, three years after Lloyds started writing the policies, and fresh claims will continue to be made until the end of this year (CW, December 8, 1977), three years after the last policies were issued.

By the end of next year nearly all the equipment covered will have reached the point where the three-year break clause in the original leasing contract can be invoked by the lessee, the consequences of which the "J" policy is intended to guard against.

Payments to lessors who have

had their claims accepted by Lloyds are made on a monthly basis and they make up the difference between what the leasing company is actually receiving in rental payments from a second lease on the machine and the sum insured on the "J" policy.

Lloyds pointed out that about half of all the equipment covered by the "J" policies was peripheral equipment, as opposed to CPUs. The total original value of all the equipment involved was about \$2,000 million and the total sum insured came to about \$1,000 million.

Asked about the role of the First National Bank of Boston with which Lloyds is now working in the US, Lloyds said that the bank's role was simply that of an administrator, facilitating the payment of claims. The bank pays the individual claims on the lessor's behalf and is reimbursed in a lump sum each quarter by Lloyds.

Lloyds said this arrangement underwrote the necessity for every underwriter in London to be consulted before any claim was paid in the US.

Lloyds stressed that the Boston bank was not organising any massive sell-off of the insured machines and neither was any broker or group of brokers. The re-marketing of the machines was entirely in the hands of the lessors who hold "J" policies.

Five GA directors sued by former president

STILL sore at being ousted from the presidency of the company that he founded (CW, May 31), General Automation's Larry Goshorn has launched a new lawsuit against the five directors who voted his removal. Goshorn remains a GA director, and the lawsuit alleges inter alia that his fellow directors have posted

armed guards to deny him access to company premises. The other directors refute all the allegations in the suit. They say that Goshorn has had full access to company premises and add that each director has an obligation to act responsibly.

The suit is the second brought by Goshorn.

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First 4331 delivered in UK

WHAT is believed to have been the first IBM 4331 to be delivered in the UK was installed last week by SDI at its 110, Wymcote offices. It was supplied to SDI by Interphase Brokerage and Leasing, Ascot.

Two other software production companies in direct competition with IBM have also been busy in being awarded machines: the first batch.

These are MSP, which is taking delivery of a 4331 in the middle of this month, and Altergo, which has been offered its machine for August.

Suggestions that these will be respectively the third and sixth 4331s to be delivered in the UK were refuted by an SDI spokesman, who said that machines had already been delivered, in addition to the one mentioned.

He could assign no great significance to the fact that for software-prophet companies had emerged close to the list following the customer order randomisation.

Computer education exhibition

COMPUTER Education will be the theme of a one-day exhibition and conference being held on July 9 by Radnor College, Further Education in Llandudno, Wales. Powys, as part of the Microprocessors Application project.

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Meditation en masse

YOU will have heard of Cottage Industry Computing, but how about Stately Home Industry Computing?

The other day I went out to Montmore Towers in Buckinghamshire, the magnificent Victorian pile built by the Rothschilds and recently bought by the Maharishi Mahesh Yogi and his crowd, transcendental meditation for the purpose of.

The house is now inhabited

by 80 fresh-faced young men (no robes or sandals — dinner jackets were the order of the evening) who constitute the World Government of the Age of Enlightenment, for Great Britain. Our host was the Minister of All Possibilities — Research and Development, who explained that meditation brings the mind to the vacuum state of quantum physics, which contains all possibilities and where we can tap the infinite organising power of nature.

This development of the technology of pure consciousness leads to mastery of the field of infinite correlation, and reduces collective negativity. (I hope you are following all this.)

It turns out that if you get enough meditators all together in one place — a sort of critical mass of meditators — peace descends on the community and all terrorists, guerillas, and oppressors lay down their arms. Harmony, creativity, and happiness reign. Hence the Age of Enlightenment.

To achieve this admirable aim, everyone is busily learning to meditate, but sadly in the meantime money is required to make ends meet. So it has been decided to go into business writing computer programs. To this end a Pet home computer has been bought, and there indeed it was, sitting in the corner of the Grand Hall, freshly unpacked.

"We have learnt Basic," one of the meditators told me, "and a friend is coming out to teach us APL."

What exotic programs are they going to write, I asked. "Oh, small business systems — stock control, payroll, that sort of thing."

Your new applications programming team.

For disbelievers

MY colleague Martin Banks, recently returned from the IMMM show in Geneva, tells me there was consternation among visitors who were hoping to catch a glimpse of the wares of one of the firms listed in the 'catalogue', Patrick Computer Systems of Winnipeg, Canada. They went round to the stand, number 632 in the Palais des Expositions, only to find it completely bare.

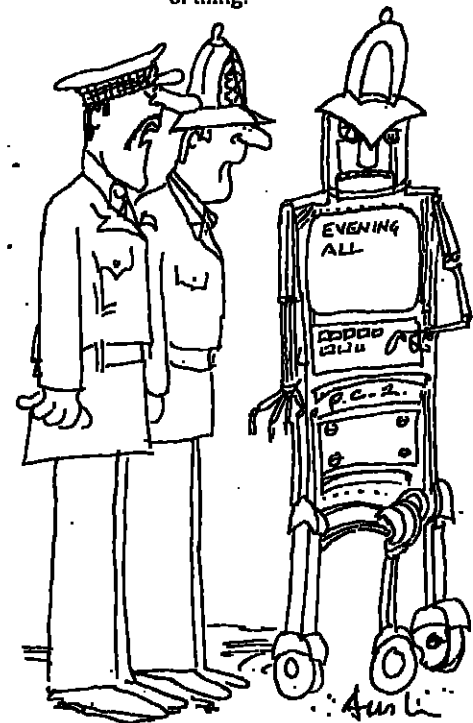
Martin assumed that the firm had just not turned up. I pointed out to him, though, that Patrick Computer Systems' star product is a small business machine called Leprechaun.

Now, everybody knows that just because you can't see a Leprechaun, doesn't mean it isn't there. I can assure disappointed visitors that Patrick and his pals were eagerly waiting for your custom, and if only you had put your trust in them and their little green machine you could be arriving at your office in the morning to find all your sales ledgers and invoices neatly done for you. Shame on you for not believing.

Hardware—Disney-style

I USED to think that we computer people had our bizarre terminology largely to ourselves, so I was a little miffed to discover that in the US amusements park business — Disneyland, Magic Mountain, Knotts Berry Farm and so forth — hardware is things like roller coasters.

They have their own software too. Turns out that software is variable entertainment — drum majorettes, black-face minstrel shows, whey-faced folk groups etc.



"I told you that the police national computer was the thin end of the wedge."

Disc drive challenge for IBM H-series

AN alternative to the high capacity disc drive, code-named "Whitney", that IBM is expected to introduce with the projected H-series of large scale systems, is being developed by Storage Technology, according to the company's chairman, Jesse Aweida. Storage is also bringing out a disc subsystem for 4300 machines.

According to Aweida "Whitney" will have a capacity of 1.2 Megabytes per drive, nearly four times the capacity of the 3350 drive.

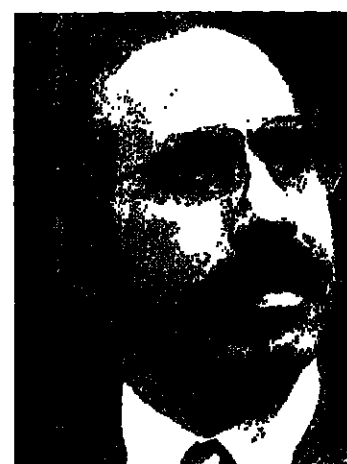
Aweida said that the high capacity of the "Whitney" drive would be achieved by a dramatic increase in linear recording density to at least 12,000 bpi, twice the existing maximum.

But the number of tracks per inch was expected to be only 750, actually less than the track density on Storage's 8850 drive which records at 957 tpi. The 8850 stores 635 Megabytes on each spindle.

Apart from the high recording density of "Whitney", another significant technical feature was expected to be two read/write head actuators per pack.

Looking a bit further into the future, Aweida said that capacities of 3,000 Megabytes per spindle would be available within five years.

Much nearer in the future Storage will be launching an alternative to the 3880 disc subsystem that IBM introduced with the 4300 machines early this year (CW, February 8). The



AWEIDA... high capacity achieved by a dramatic increase in linear recording density.

3880 supports the 3370 drive which stores 570 Megabytes per spindle.

Aweida pointed out that Storage's 3880 compatible system would essentially be a by-product of the company's development of a "Whitney" alternative.

The club meeting was also given a demonstration of a Rockwell Alm 65, 6502-based microcomputer with keyboard and 20 character LED display and a 20 character printer on board. The £250 micro has five 2K ROM sockets, two of which contain the monitor with keyboard and printer routines and three are available for options such as the £60 two pass assembler.

Because the printer is driven from ROM, it can be programmed to print Arabic characters or graphics. Interfacing is via 10 line VIA, versatile interface adapter chip, which also drives a serial line at speeds selectable from 110 to 9,600 bps.

An £20 homebuilt RCA Cosmic Elf followed, shown by Jo Cunningham who has started a Cosmic Users Club, which has 13 members so far. Based on the RCA 1802 processor chip, the machine uses LEDs, switches for output and input, as well as a hexadecimal keyboard and TV display.

The NLHCC is planning to buy several of each machine for its next season.

Finally a Leany remote control car was shown which has two Texas Instruments 1000 4 bit processors to implement the nine commands which can be transmitted from a keypad to the car by radio link. The car costs £23 — and there are 141 shopping days left for Christmas.

Plans were announced for the next season starting at the end of September, when the club will become a class, with courses for business users and professionals as well as software workers. London's DEC system users and other machine users are also invited to the Polytechnic's summer event which will be open to members and students at reduced rates.

The main theme of the film is the California scene, showing computer education in high schools, with four machines to a class in one school while another school has one machine between two students.

An early pattern of bussing children to computer centres has changed in favour of bussing microcomputers between schools, and a feature of several schools is last season's students becoming this season's tutors and consultants.

development of a "Whitney" alternative, but he saw a growing market for Storage Technology among so called medium-scale IBM system users now that the power of such systems was so much greater. Traditionally Storage has tended to concentrate on users of big systems.

A relative late comer to the plug compatible disc drive market, Storage Technology claims to now have about 70% of the total business worldwide for drives that are software compatible with the IBM 3350. The company now has marketing subsidiaries in most parts of Western Europe.

The 3880 can now be attached to IBM 370 and 3033 machines but it will only support the older 3340 and 3344 drives on those systems, not the 3370. So the 317.5 Megabyte per spindle 3350 is still the biggest IBM built drive that can be used with IBM's large scale systems. On 4300 systems the 3880 will support the 3340, 3344 and 3370.

The same interface issue loomed large in the Memorex anti-trust case against IBM last year in the US and the case ended in the judge giving a directed verdict in favour of IBM. Memorex is now appealing against this verdict.

In Europe, Memorex is claiming that the IBM practice infringes the anti-monopoly articles in the Treaty of Rome.

A statement issued by IBM on the Memorex complaint to the EEC Commission says, "As we have not been informed by the Commission of the details of the complaint, we cannot comment on specific allegations. However, based on Press reports of the issue seemingly in question we can say that it appears to be the same issue raised by Memorex in its unsuccessful litigation in the US."

"We, therefore, consider the allegations as reported unfounded and without merit."

IBM scored a further success in the US late last month when another anti-trust opponent, Calcomp, lost its appeal against a directed verdict, brought in two years ago, that there was no case for IBM to answer (CW, February 17, 1977).

In another issue involving the EEC Commission, IBM is insisting that it would be violating the Treaty of Rome if it revealed its price to third party lessors of IBM equipment. These articles are concerned with anti-competitive collusion between companies, in particular with price fixing.

However, the European Computer Leasing and Trading Association, Eclat, believes that IBM would not be violating the Treaty if it made its price lists available; and Eclat is currently trying to obtain official confirmation from the EEC that this view is correct.

Following the announcement of the 1100/60 bit-slice mainframe (CW, June 14), more clues have emerged about the nature of Univac's forthcoming back-end database processor. The company is applying the technique used in the 1100/60, that of assembling multiple bit-slice processors and running them in parallel in order to get desired performance, in the database processor.

Univac's plans for a back-end processor combining features of network and relational databases were first revealed in

NCC's commercial business up 35%

AN increase of 35% in business with the general computing community, as opposed to the government, is one of the more significant aspects of the first annual report from the National Computing Centre since it changed its constitution last year. The report covers the 1978/79 year which ended on March 31.

Memorex complaint to EEC 'unfounded'

—SAYS IBM

"UNFOUNDED and without merit" is the way IBM has described the anti-monopoly complaint being made to the EEC Commission by Memorex.

The plug-compatible peripheral supplier wants the EEC to outlaw IBM's practice of not releasing interface data for new peripheral products until the first deliveries of the kit take place.

The operating surplus charged up before corporation tax in 1978/79 came to £250,000 compared with £216,000 the year before, although the surplus after tax was less — £82,000 compared with £116,000 in 1977/78. The Inland Revenue adjusted the tax upwards to £177,153 in 1978/79 because the £100,000 paid in 1977/78 was a

First 4300 benchmark figures

THE first set of benchmark figures for IBM's new 4300 series, compiled from IBM Information, have been published by Advanced Computer Techniques Corp.

Most striking finding is that the Extended Control Program Support microcode enhancements on the 4341 can reduce supervisor time more than 80% under DOS/VSE and OS/VSI, and reduce the overhead imposed by VM/370 by about 40%.

On commercial applications, a 4331 fitted with the new 3310 disc drive offers between 0.65 and 1.0 times the power of a 370/138 using a 3330 disc, and a 4341 offers between 3.4 and 4.2 times the performance of the same 3300 running Fortran jobs, the 4331 matches the 138 and the 4341 is 6.2 times faster.

The better performance on scientific applications is not surprising in the case of the 4331, since commercial jobs tend to be much more input-output-bound, and on the 4331 input-output activity is handled by integrated channel adapters which steal processor cycles.

The full report is available from ACT at 437, Madison Avenue, New York 10022, US.

Maintenance deals

ICL System 4/70 and 4/72 systems at the Universities of Cardiff and Exeter are the subjects of maintenance contracts won by the Independent maintenance company Data Processing Customer Engineering. DPE says that it is now holding discussions with a number of other important System 4 users.

Computer Weekly at the beginning of the year (CW, January 4).

The company is working on a back-end database with a DMS-1100 interface, which combines the best features of Codasyl, network and relational databases, with the common features microcoded.

It appears that the back-end system will have two levels of processor: the database processor itself, and additional intelligence within the memory to improve further the speed and efficiency of access to data.

Univac's plans for a back-end processor combining features of network and relational databases were first revealed in

lot less than the 52% of operating surplus that should have been paid.

The NCC's change from a grant-aided organisation to independence was completed last year. Its governing body changed from a council to an industrial type board of directors.

Computers and electronics growth at GEC and Plessey

YEAR-END figures from the two British electronic giants show pre-tax profits up over 16% at GEC, but only 7.9% at Plessey.

Both companies close their books on March 31, and GEC recorded pre-tax profits of £378.4 million on turnover up 6.7% at £2,500 million. The Electronics, Automation and Telecommunications group was a star performer, with profits up over 32% at £101.2 million on turnover up 28% at £862 million.

This division is more than twice as big as the next largest, and the figures include sales to other GEC companies.

As a result, the £7.5 million profit made on the £33.5 million



SEEN here with the contract that will take a range of DEC-based small business systems from Plessey Peripheral Systems on to the high streets are Mike Brind (left), general manager of the Plessey division, and Bill Cannings, managing director of the Byre Shop chain of retail outlets which will now be selling the systems (CW, July 8).

Plessey's 7.9% profit improvement at £48.2 million was made on a growth in turnover of 6.1% to £648.3 million, and would have been £2 million higher but for the rise in the value of sterling against the currencies of most of the overseas countries where Plessey trades.

Profit figures were also hit by two troublesome operations: the Garrard record changer business lost £2.8 million, and the Strouger Exchange factory at Edge Hill, Liverpool, lost £8 million.

As a result, the £7.5 million profit made on the £33.5 million

sale of Plessey's 24.42% stake in ICL was more than wiped out.

Growth in Plessey's computer-related activities, categorised as office, data and control systems, was dramatic: profits rose 16% to £8.06 million, 20.3% of the total, on turnover up a formidable 56% at £104.9 million, where they represent 16.2% of Plessey's turnover.

Electronic Systems and Equipment, also increasingly involving computer-based products, was the biggest single contributor, providing 35.8% of the total £15.8 million on a turnover of £178.2 million.

Amdahl strong despite profits fall

ALTHOUGH the figures for the second quarter, due from Amdahl next week, are expected to show a dramatic decline in profits, the setback is unlikely to do the company any serious damage, and the fall in the share price from a 1979 peak of \$71 to the mid \$20s is almost certainly overdone.

The more important figure will be that for computers installed, and the company says that shipments are likely to be at a record level.

The reason that profits will be hit is that 40% of customers are

opting to lease rather than buy their machines, and leases do not start to generate profits until well into the leasing term.

However leased machines are a valuable asset to Amdahl, and if the company began to run short of cash, it could raise money by selling an interest in its lease base. So far it has not done so, because the prevailing high interest rates in the US would make it unattractive. It could well change its mind if, as expected, interest rates begin to fall later in the year.

The setback was fully anticipated by the company. Asked about the cash reserves Amdahl was building 18 months ago, Dr Gene Amdahl told Computer Weekly, "We are offering leases, and not many have been taken yet, but if that changed, the cash position would alter very quickly."

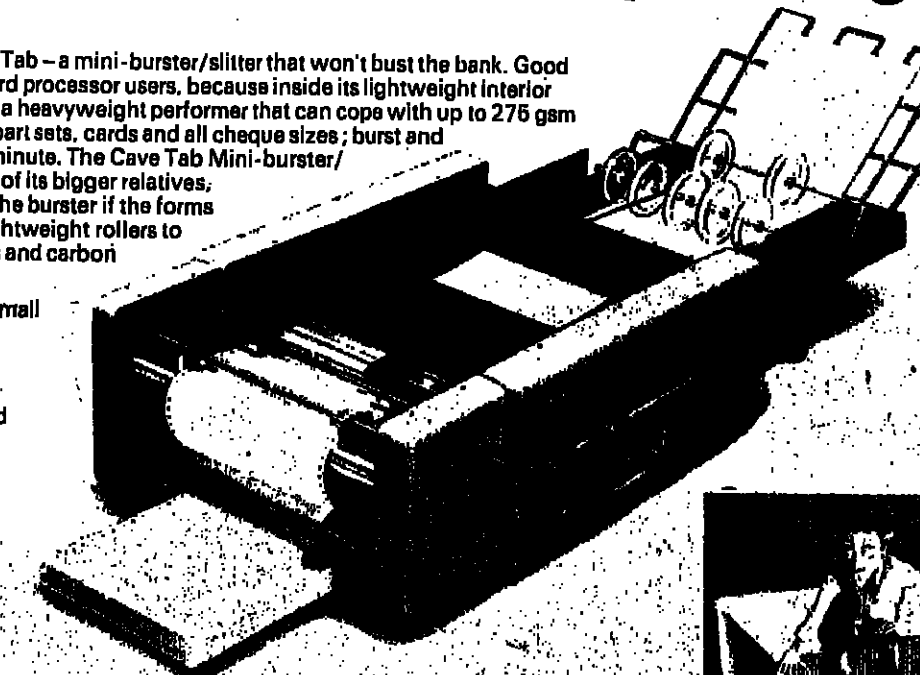
Intel's problems in the plug-compatible market are much more severe than Amdahl's, since Intel has been hit by a decline in demand for its AS machines, whereas there has so far been no slackening in demand for Amdahl's 470V line.

Mini-burster..Mini-slitter..Mini-price tag

Introducing the latest from Cave Tab — a mini-burster/slitter that won't bust the bank. Good news for mini-computer and word processor users, because inside its lightweight interior (it ticks the scales at 40 kgs) is a heavyweight performer that can cope with up to 275 gm forms. Lightweight forms, four-part sets, cards and all cheque sizes; burst and slit at speeds up to 200 feet per minute. The Cave Tab Mini-burster/slitter has all the special features of its bigger relatives, including detectors which stop the burster if the forms are not stacking properly, and lightweight rollers to eliminate tracking on carbonless and carbon multi-part forms.

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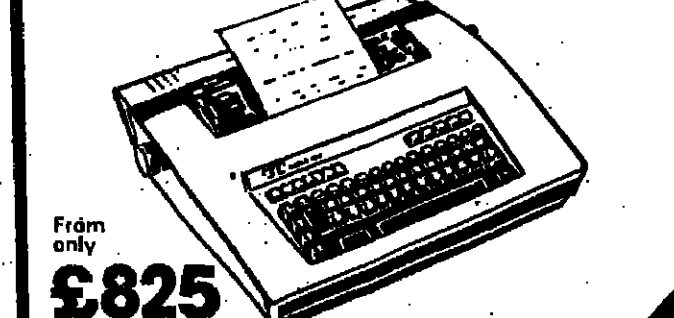
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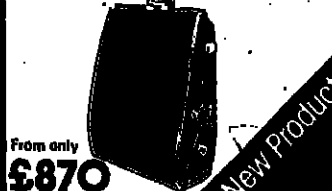
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MICHIE'S PRIVATEVIEW

Robots, hermits and harlots

OUR new Ambassador to Washington, Sir Nicholas Henderson, has lamented the continuing industrial decline of Britain. Other voices warn of our role as Europe's new peasantry, and have commented on lack of national fire and will.

BBC Horizon's recent "The Robots are Coming" joined us anew with statistics of programmable robots pouring into Japanese and American manufacturing industry, and to a lesser extent into the factories of our European competitors. Some 4,000 Japanese robots are already at work, largely in the car industry. In British Leyland, only a handful have been purchased and these are for technical assessment only. None are doing actual jobs.

The screen showed Engelberger, the buoyant founder of the world's largest producer of robots, Unimation Corp. He smiled in rueful sympathy at our parlous state.

Why are industrial robots not being introduced here? His answer was one-sided but con-

vincing. He blamed managerial timidity. As for the trade unions, he had seen little signs of significant opposition from that quarter. Further, British management was so scared to mention such topics to the work-force that they were not in a position to know what the shop-floor attitude might be.

To complete this picture, mention should also be made of government policy, or non-policy, which allows Britain's annual rate of investment in re-equipping industry to drift at about half that of the rest of the advanced nations. Surely the know-nothing management tradition, impervious alike to governmental and trade union scolding, might yield to a suf-

ficiently steep scale of exemptions and premiums built into company tax legislation?

Engelberger also made the point, based on US experience, that to be displaced by a robot from a boring and dirty job is not so bad if the worker ends up supervising a robot team.

Of course there has to be a net reduction of working hours. But how welcome, said an ASTMS spokesman on the same programme, if that could be managed in such a way that we spend less time doing what we have to do and more time doing what we want to do?

Some years ago a former Lord Provost was so moved by this thought that in his retirement speech he mis-spoke himself to

immortal effect.

"I'll be away now to the far highlands," he informed the solemnly assembled company "where I plan to live the life of a harlot!"

Historians of the occasion now believe that the intended word was "hermit." Yet as Freud was the first to emphasise, these slips can reveal hidden attitudes. Doubtless in a Scottish Lord Provost's secret mind, doing quietly what one wants to do is not filed, as it would be in the mind of a Catholic or a Buddhist, under "RETREAT, SAINTLY" but rather under "IDLENESS" with all the degeneracies and depravities into which that devilish state may plunge even the best Presbyterian.

Truly, there are many breeds of men. But many more are the mythologies which they cherish about each other. The following is from a book to be found in school-rooms: "They are lazy individuals, apparently devoid of morals, and always prepared to lie, cheat and steal."

Whose conversation are we overhearing? Perhaps it is a data processing manager letting his hair down about maintenance staff. Or is it a board member at Dagenham grousing about the work-force? Yet it could just as plausibly be one of the shop stewards on the subject of the

board! Maybe it was overheard in the Athenaeum, and the target was the new Ministers of the Crown? And yet it sounds not unlike the late Richard Crossman writing about senior civil servants. Or in the groves of Academe: "Tell me, young person, what are the Professors like round here?" Or "You were saying, Dean, about the students..."

Let me reveal that the statement is from a New South Wales textbook. It refers to the Australian Aborigines. Textbooks are purportedly sources of knowledge. This circumstance starts in my mind a train of uneasy thought.

A more dynamic knowledge-source than any textbook is arising in the form of computer-based "expert systems," of which SRI International's PROSPECTOR is an impressive example. One of PROSPECTOR's areas of expertise is the geology of uranium. As it happens, political tension exists around the discovery of uranium deposits lying beneath the Aborigine's traditional habits.

PROSPECTOR's knowledge, of course, does not at present extend to non-geological factors which might affect decisions to drill. But for Son of PROSPECTOR or Grandson of PROSPECTOR the picture will be less clear. It is not beyond possibility that such a system might incorporate relevant legal information concerning Aborigines and land rights. Beyond that, the proprietors of automated systems may wish to add to the knowledge-base more than dry technical and legal facts, and to include some looser generalisations about relevant human groups. Questions of social accountability of stored "knowledge" will certainly then arise.

Equally certainly, impartial study of human history and politics should (but will not fully) prepare the mind of A. Bloggs, twenty-first century supervisor of robots. Learning forward expectantly, he types to SUPER-RDB, the aptest and most perceptive member of his team: "What's busy, apparently devoid of morals, and always prepared to lie, cheat and steal?" Super-Rdb's reply? ... You've guessed it: "Homo sapiens."

Donald Irvine

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PROGRAMMER NOTES

The First Law of Computing is that a program is never finished

THE claim that a program is 99% complete is only rarely an outright lie, but equally it hardly ever means that a job which has already taken 99 days will be finished in another one.

Instead, what it often means is that a way can be seen to finishing the software which does not entail major redesign.

Such optimism may or may not be well-founded, but should in either case be treated with some caution; it may well signal that the programmer regards his involvement as ended and is itching to get on to a new assignment.

In practice, of course, what often happens is that pressure of other work means that the programmer's wishes in this respect are met. The program he was previously working on, still "99% complete," then slides gracefully from development status into a maintenance phase.

How often is it, then, that a program is actually completed?

Given the preceding discussion, it will perhaps come as no surprise that the answer made

by one leading researcher is "never." However, the reasons he gives are fundamental rather than anecdotal.

The fact that a program can never be finished is the "First Law of Computing," according to Professor Manny Lehman, of Imperial College, London, and stems from the fact that a program is always a model of the real world.

"This is intrinsic to a program," he noted, "and it means that software can never be perfect. You can never keep up in your software with the changes that are occurring in the real world."

"Besides, the very introduction of a computer system changes the world that its component programs are supposed to be modelling. So it's inevitable that it will be immediately out of date."

"In the context of banking, for example, customers are restricted to conducting transactions between 9.30 and 3.30. However, if you introduce automated equipment, the

pattern of bank use will undoubtedly change, possibly in ways very hard to predict.

"A system designed to handle current workload patterns could for instance turn out to be both over-equipped and unsuitable when customers adapt to the new freedoms."

"Another way of putting it is that the statement of requirements for a system will probably be out of date as soon as it is implemented — if not before. Yet requirement documents are hardly ever updated once a system has gone live."

One lesson that Lehman draws from all this is that changeability is one of the most important properties of a program.

"Structure has no value in itself," he says, "except in so far as it improves changeability. Unfortunately, while it is clear that to invest in changeability is worthwhile, just how can we about it is still a research question."

Three more opt for Asas

THREE further North American customers have been found for Asas, the finite element analysis developed by Atkins R&D, the Canadian Department of Defence sites have leased the software, for use on Xerox and DECsystem 20 equipment. The third customer, University of New Orleans, has purchased a DECsystem 20.

Puzzler

ON the occasion of his daughter's marriage, a sporting squire gives the happy couple a plot of land, to be selected by them from his vast estates. To test their business acumen, he specifies that the plot be bordered by four straight sides with respective lengths of 1, 3, 6 and 8 furlongs and that they them-

selves should decide exactly what shape it is to be. How should the newly-weds plan their boundaries, in order to maximise the area of the plot? What shape is best, and how many square furlongs will then be enclosed? Does the order of the sides matter? See page 45 for solution.

SOFTWARE FILE

Pre-release specs wanted from IBM

STILL smarting over the lack of pre-release information on DOS/VSE, which has until now prevented them from updating system software packages for use with the new operating system, software houses are optimistic that the problem will be alleviated in future via an extension to the Software Information Exchange Program launched late last year (Software File, January 11).

The proposals, to which IBM is understood to have agreed in principle and which are supported by Adapso in the US and by the CSA in the UK, call for IBM to provide more advance information on future software products.

What is envisaged is that software houses should be able

to obtain full documentation on programs that have gone to alpha or beta sites, gaining a lead of perhaps one to three months before the software is fully released.

Participating companies would be required to pay the standard monthly licence fee for the program product, receiving everything apart from the program itself.

Companies could subsequently return the documentation, having paid licence fees only for the months for which they held it.

Currently, the information exchange programme only gives to software houses information that is already freely available to IBM users.

In the case of DOS/VSE, this has meant that companies are only now receiving the detailed specifications they need to implement native mode versions of their products on the 4300.

Thus in many cases where 4300 implementations have been promised, it will still be some months before they become available.

The delays, which mean that early DOS/VSE sites are at the moment unable to use proprietary products interfaced intimately to DOS/VSE, are naturally aggravating to both suppliers and users.

Combined with the lack of full functional specifications for many DOS/VSE components, they have led to a general uncertainty in the market, with potential purchasers reported by some to be holding back.

Hours to market Sort-1 enhancement

AN enhanced version of the OMSI Sort-1 package for DEC PDP-11 users running under RSTS/E is being marketed by Houds Computing. Called OMSI Sort-1-Plus, the software runs in 18K words and is priced at \$475.

Features of the package include the ability to sort up to 16 million records, each up to 512 bytes long, with as many as 15 specified sort keys. Key fields may be alphanumeric, integer, decimal, or single or double precision floating point.

Seen as a complete replacement for DEC's V08-01A package, the new version also permits spanned records.

Infonet addition

A FINANCIAL modelling system called Sofi (Simulation of Financial Institutions) has been made available by CSC on its Infonet service. Sold to be designed specifically for financial experts, the package is interactive and includes its own database and 3-D graphics facilities.

Johnson to sell OS prod control system

A HIGHLY regarded production control system for IBM OS installations is to be marketed in this country by the newly-formed UK subsidiary of Johnson Systems (Software File, July 5).

The system, Apex, is already marketed by Johnson in the US and West Germany and will be available here by Christmas.

Johnson obtained US marketing rights to Apex last year from the West German software house which developed the system, Sven, of Hamburg. At around the same time, European rights to the software — then known as Pecs — were acquired by CAP-PP (Software File, December 14, 1978).

Johnson has since purchased the system outright and is thought to be waiting only for the CAP-PP licence to expire before marketing the software here.

Production control packages are designed to improve the efficiency of traditional opera-

tions departments by automating such aspects as the submission of JCL and the initiation of dependent processing steps.

The best-known products in this area are probably the Value systems marketed in this country by RTZ Computer Services. A Johnson spokesman noted, however, that these were typically more ambitious than Apex, in that they aimed to load a machine according to a timed job schedule.

Last week's story on Johnson's other main products, Jars (Software File, July 5) erroneously reported that Computer Associates had acquired Datchron, the developer of the principal competitor to Jars, Jasper. CA has acquired only Jasper, and is currently handling marketing and first-line technical support. Responsibility for second-line technical support and enhancement will be transferred to CA at the end of a hand-over period.

HP makes available its implementation language

ECHOING DEC's release to end-users of its VAX-11/780 system implementation language, Bliss-32, Hewlett-Packard has made available its equivalent facility on the HP300, called SL/300.

Like Bliss, SL/300 is a high level, block structured language intended to give much the same efficiency and control as assembler. It is the language in which all the HP300 operating system is written, including compilers and file and database management subsystems.

In support of its use for writing system software, it includes such features as dynamic array allocation; recursive and re-entrant procedures; bit-level manipulation; and task synchronisation.

It also supports a full range of

data types; an extensive file system; and unlimited statement nesting.

HP anticipates that SL/300 will be used chiefly by programming specialists for tailoring application systems and by third-party program suppliers, such as OEMs.

Indications that the MMS general ledger and financial reporting system was being adapted for use on minicomputers (Software File, April 20, 1978) have been followed by the release of a version for the HP3000. Written in Cobol, rather than in the HP3000 implementation language SL/3000, the software is marketed in this country by Package Programs and joins existing versions for the IBM System 3, ICL 2903, and IBM and ICL mainframes.

Recovery aid a feature of Cullinane's IDMS-DC

CONCURRENTLY with the release in the US of its teleprocessing monitor package IDMS-DC, Cullinane has announced record profits for the financial year ending on April 30, showing a growth of 56% over 1978.

Total revenues reached \$13.9 million with profits of \$1.6 million. The equivalent figures for 1978 were \$8.9 million and \$1.0 million respectively.

IDMS-DC, the nucleus of which became available last year (Software File, November 2, 1978), is fully integrated with IDMS itself, according to the company.

By bringing the two architectures together, it notes, such benefits accrue as more economical use of memory, greater simplicity of use, and faster response time.

It also helps in the area of recovery, where the use of

separate DBMS and TP facilities can give rise to problems of incomplete recovery following a crash. In an integrated architecture, all work can be recovered in step.

The US licence fee for IDMS-DC has been set at \$50,000 with a 10% annual maintenance charge.

A rumour that Cullinane might be about to enter the UK market directly, displacing its long-term agent Scicon, has been firmly denied by the company.

A Cullinane spokesman said that the company had no such plans and registered "amazement and surprise" at the suggestion.

Cullinane trades through agents in most of Europe, including West Germany, but is directly represented in the Benelux countries through a subsidiary in Belgium.

Euro marketing review

THE European market for software packages and packaged computer services has been analysed in a 272 page study now available from Frost and Sullivan. The report covers the years 1977 to 1986, and is priced at \$850.

Frost and Sullivan expects the total market to reach \$16 billion a year by 1986, and to total

cumulatively \$85 billion over the period. Surprisingly perhaps, software packages themselves are predicted to account for less than six per cent of this business.

Professional services and bureau processing will take the largest share, accounting between them for 64%, with the rest being spent on timesharing.

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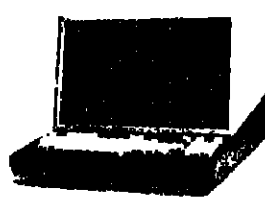
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OP SPOT

'Contract staff should not try to run the computer room'

IF the operations department is to provide the best possible service, it must take into account user requirements — which vary considerably from one company to the next.

As a result, sites which are similar in terms of hardware and software often differ considerably as regards their applications procedures.

This is why the suggestions of contract staff are seldom taken up, according to Barry Johnson, operations manager at Univac's West London benchmark centre.

Responding to comments made by contract staff at a meeting on contract work, held by operations staff agency Co-Operators (Op Spot, June 21), Johnson said: "Contract staff can't expect to walk into an installation and tell the operators how to run the system — it's just not on."

Procedures vary so much from one site to the next. So the shift leader often can't apply what the contractor puts forward, even if he wants to."

According to Johnson, contractors should use the work as a means of broadening their experience of the industry, and then look to enter operations management.

"Rather than trying to tell shift leaders how to run the

Ex-TOPS students seek work

THREE former TOPS operations students (Op Spot, June 14) are still seeking positions in the computer industry, according to Derek Pinnock, lecturer at Borehamwood College, Herts.

"As far as I know, they are all going through the interview



Derek Pinnock

process, but none has been offered anything suitable, as yet," he said.

According to Pinnock, those from Great Yarmouth and Basingstoke have their own transport and are willing to travel, but the one who lives in Luton would like a position somewhere near home.

The next TOPS operations course at Borehamwood College starts on September 10, and again, Pinnock will be looking for sites to take students for three weeks' practical training.

For further information, contact Derek Pinnock at Borehamwood College on 01-953 6024.

the contractors at the meeting said — 'I'm only in it for the money. It's a fact of life.'

Johnson worked with contractors during his days as an operator at Shell Mex in Wythenshawe, Manchester.

"I always got on quite well with them and have no qualms about their ability. In fact, in some cases they are better than permanent staff."

But, speaking as an operations manager, Johnson pointed out that contractors don't always have the right attitude towards the work.

"There must be a question mark over their drive and approach — you can't expect them to take the same interest as permanent staff," he said.

His installation does not employ contract staff because of "the confidential nature" of the work carried out there, he added.

Make sure resources aren't wasted under IBM OS, with Modify

THE IBM OS Modify command is used by the operator to alter the function of system reader, writer and initiator procedures.

It is useful in that it sometimes saves the operator from having to stop and start procedures. The format of Modify varies in accordance with each procedure.

To ensure that system resources are not wasted, the console operator should keep a close watch on the input queues and the classes served by each of the system initiators.

If one of the input queues is particularly long, the operator should use the Modify command to alter the order in which the queues are served by one or two initiators. For example, should input queue "P" be the one concerned, he might enter the following commands:

F INIT, CLASS=PXY
F INIT2, CLASS=PXAY

After these commands have been processed by the system, input queue "P" will be given top priority by both INIT1 and INIT2.

Similarly, should input queue "T", for example, be full, the operator can modify a writer to

deal with it. To that end, he might enter:

F OEE, CLASS=TKYZ

After this command has been carried out by the system, printer OEE will serve output classes T, X, Y and Z, in that order.

In relation to readers, Modify may be used to command the card reader to place jobs on the system hold queue. The command format is as follows:

F RDRI, TYPRUN=HOLD

This can be useful to operator and programmer alike at sites where an open shop form of job testing is employed (Op Spot, April 12). At such installations the programmers have access to a card reader, enabling them to feed their own work to the system.

Problems sometimes arise as the end of testing time approaches because the programmers are always keen "to get one more shot in", and the operators are, at least, equally keen to get them off the system.

A compromise is reached by modifying the reader as shown above. This enables the programmers to put their work on the hold queue for processing later in the day.

Don't blame the op for wavy-line printing

"If the ICL 1933 printer produces wavy-line output it's the fault of the unit, so don't put the blame on the operator."

Thus Ron Linton, computer operations controller at Manchester Polytechnic, replies to comments from Gerry Millis, managing director of computer bureau Mills Associates (Op Spot, June 7).

Says Linton, "We have both an ICL 1933 and a 1932, and, as far as I can remember, we have always had trouble getting good print quality from them."

The wavy-line print listings sometimes produced by the units is due to the manner in which they work, he says.

"They are electro-mechanical barrel printers which print all the As in a line, then all the Bs

and then all the Cs, and so on. You find that the paper has moved slightly between each character, resulting in wavy-line print."

Seminars on future developments

OPERATIONS specialists Infotech Operations, are to run a series of seminars on the next five years' technology developments and their effect on the role of the operations department.

Called the International Management Forum, it is aimed at the operations manager, and meetings are to be held in London on October 17-18, November 14-15 and December 17-18.

By Bernard Allen

HINT OF THE WEEK

For those who can't hear the telephone

WHEN the card readers are going full out and two or three printers are clattering away, the computer room is a very noisy environment. This causes problems for the operators when they are dealing with telephone calls from job control and users.

To ease matters, use telephones which have a facility for adjusting volume, suggests Mike Lane, a shift leader at Queen Elizabeth Hospital in Edgbaston, Birmingham.

He writes, "If noise is a problem at your site, get the Post Office to install telephones which are normally supplied to the hard of hearing."

"Fitted to the earphone is a knob which enables you to adjust the sound level. This often makes it easier to understand what the person on the other end of the line is saying."

By the way, the Post Office charges £5 for installing these telephones, and the rental charge is 40p above the standard quarterly rate.

'No longer living in the era of the Tolpuddle Martyrs'

"IF more people were convinced that we are no longer in the era of the Tolpuddle Martyrs, these full-time union officials could only add to the swelling unemployment figures."

With these words, R. Jacobs, operations manager at British Enkalon in Leicester, comes to the defence of John O'Reilly, chief operator at Astral Computer Services, London.

O'Reilly was criticised by union officials (Op Spot, June 14) for saying that there is no need for operators to become involved with unions, and that anyone dissatisfied with his site has only to seek another position in the industry (Op Spot, May 24).

Comments Jacobs, "To use the words of H. Moore of APEX, I am quite sure that John O'Reilly is 'worth his buttons'. If that were not the case, he would not be a chief operator now."

According to Jacobs, operators should bear in mind that chief operators, managers and the like have experience of working shifts in the computer room environment.

"It must be remembered that the equipment we used was, in most cases, similar to that in use today. Even with the advent of new technology, the underlying principles of operation have not changed dramatically."

Looking back on his time as an operator, Jacobs recalls that staff were genuinely interested

in the work:

"In my days as an operator, we were not particularly interested in what we could squeeze from an already overstretched OP budget," he comments.

He remembers how he and his colleagues were prepared to perform tasks above and beyond the call of duty for the good of the department.

"We came into computing knowing full well that we were required to work shifts and I'd the hours that God sent us."

"How many operators I wonder, they chose to work through their meal break or left several hours late in order to help the next shift? I certainly can't recall."

"Very rarely was payment asked for on such occasions. Overtime pay was only expected when management actually requested extra time to be put by the operators."

He mentions that when he was an operator, the majority of staff realised that the computer room "bouts hell out of 90% of other forms of employment."

In his view, the majority of present-day operators have an attitude similar to that of the predecessors.

But to those who haven't, he says: "I would suggest that the few who suffer from the nine-to-five syndrome should carefully re-examine their choice of career."

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LETTERS TO THE EDITOR

'France and UK becoming the laughing stock of videotex world'

YOUR story "French pull the plug on Prestel" (CW, June 28), illustrates all too well the dangers of a narrow and parochial attitude towards videotex development.

There is no question that the future markets for videotex products and services are huge. The world's first private enterprise videotex services are about to be launched in Holland and the US, while the public service in the UK is now in being.

Trials are also being conducted in most European countries, in Canada, Hong Kong and Japan. In terms of hardware, software and expertise valuable markets are opening up. My own

company has sold its videotex research services in over a dozen countries.

The UK has a lot to offer. Prestel is still the most advanced system, in terms of the volume of information available and the range of applications covered. The lessons learned during the build-up to a public service in Britain are utterly invaluable.

The French system also has a lot to offer, particularly for an accented and subtitled language. It has much greater flexibility than Prestel, at the cost of lower efficiency.

How are Britain and France responding to the big opportunity that these videotex mar-

kets offer? By pooling their research findings? By devising a joint standard, and selling it to the rest of the world? By mounting joint Anglo-French sales missions to sell the concept of videotex first and specific products later?

No: they respond by, at best, ignoring and, at worst, denigrating each other's product.

Thus they damage the concept of videotex and reduce the market potential as a whole. Both countries are to blame and examples could be quoted against both.

There is a task here that requires ministerial action. Let Sir Keith Joseph and M. Norbert

Segard issue a top-level non-aggression directive. Let Britain and France get down to serious joint work to develop the global market, rather than indulge in mutual recrimination and abuse.

The present situation brings relief only to the Americans and Japanese, who will benefit if the European suppliers falter — and who, I can assure you, find these Anglo-French squabbles vastly amusing.

France and Britain are well on the way to making themselves the laughing stock of the videotex world. Decisive action is needed to stop this stupidity.

DAVID BUTLER
Butler Cox and Partners,
London, ECI.

Putting law study record straight

I MUST take exception to your front page headline (CW, June 21) "Grandiose law project panned", which bears no relationship to the EEC Commission's technical study in legal information retrieval as discussed at the symposium in Strasbourg, nor even to the article associated with it. I had thought that sensation seeking headlines were the prerogative of the popular press and had no place in a technical journal which had a duty to provide balanced, fair reporting.

To put the record straight, the Commission's study was a European-wide investigation aimed at identifying the common problems faced by all countries in the dissemination of

the law, and at suggesting solutions to these problems based on the use of modern computing techniques.

This formidable undertaking was entrusted to an international consortium (German, French and British) whose project team, ably led by John Killoury of Sclon, carried out the task in a highly professional manner.

The work done, embodied in six reports submitted to the Commission, was well received at Strasbourg and its high quality recognised by those present. This project has acted as a catalyst in this subject in Europe which was reflected by the heavy demand for places at the symposium.

Certainly a lively debate took place, certainly there was criticism, but it was constructive and useful and in no circumstances could the word "panned" be used to describe the proceedings.

Finally, may I say that the project was firmly based on the real needs of practising lawyers in Europe and that it sought to acquire a deep understanding of the nature of this important subject and has proposed solutions based on the operational requirement identified both in the legal office and in the computer centre providing a legal retrieval service.

This was a European initiative in an important field, based on multi-national co-operation at

the working level. This is the way ahead in Europe which deserves to be fostered and encouraged by all those interested, including, one hopes, a leading technical journal.

NORMAN NUNN-PRICE
Formerly project leader,
European Commission's
technical study in
legal information retrieval
Wantage,
Berks.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

CII-HB launches new comms products based on Level 6 mini

WITH an eye to the needs of users of public data networks, notably Transpac in France and the Nordic Datanet in Scandinavia, CII-Honeywell Bull has launched new communications products based on the Level 6 minicomputer. They are at present available only in CII-HB territory, but will be launched by Honeywell in the US, the UK and Italy when the need arises.

The new products give considerably more substance to CII-HB's communications architecture, and in recognition of this, the company has added yet another acronym, Distributed Systems Architecture, DSA, which becomes the central element of the Honeywell networking philosophy, which is called Distributive Systems Environment, DSE.

The announcement comprises counterparts for two key processors in IBM's Systems Network Architecture portfolio.

The Datanet 7100 is a Level 6-based communications processor designed to perform the same kinds of functions as

IBM's 3705. It can be used to front-end a Level 64 or Level 66 host mainframe, and handle network control, concentration and switching.

The Level 6/DSS, Distributed Systems Satellite, is a terminal controller capable of handling substantial autonomous local processing, making it a direct counterpart of IBM's 8100.

The Level 6/DSS allows terminal users to perform file transfers, execute transactions with database access and remote batch processing on the host mainframe or mainframes.

As with the newly-enhanced IBM SNA, (Software File, June 28) and Univac's Distributed Communications Architecture, DCA, which features the powerful DCP-40 communications processor (CW, June 14) the CII-HB DSA allows users to construct almost any shape of network.

The announcements from these three manufacturers underline the lack of any comparable offering from ICL.

PO's £1.5m microwave boost

GROWTH of telephone and data traffic throughout the UK trunk network, currently running at over 10% a year, is to be catered for by additions to the Post Office microwave radio network.

Orders worth £1.5 million have been placed with GEC Telecommunications for 6 x GHz radio equipment to be in-

stalled in existing transmission and repeater stations, and a new link will be set up to Sullom Voe in the Shetlands for communication with North Sea oil operations.

The microwave network also carries television signals for regional retransmission, for which it was originally set up in the 1950s.

CORAL NEWS

Coral News appears every quarter to provide users with up-to-date information, news and opinions. Items for inclusion should be sent to the Coral Press Co-ordinator, The National Computing Centre, Oxford Road, Manchester M1 7ED.

STANDARDISATION:

A draft British Standard for CORAL 66 has been issued by BSI and is available at £1.50 from their office in 101 Pentonville Road, London N1 9ND. The standard incorporates comments made on the MOD Official Definition — the Blue Book. CORAL 66 has been accepted by ISO as a candidate for international standardisation and they are circulating the draft for international reactions.

CORAL AVAILABILITY:

From four compilers in 1969, compilers now cover 36 machine ranges and are available or under development for machines from the following manufacturers: CIL, Computer Automation, Control Data, CIL, Data General, DEC, Ferranti, GEC, Hewlett Packard, Honeywell, IBM, ICL, Intel, Kongsberg, Modcomp, Motorola, Norden, Norsk Data, Perkin Elmer, Plessey, Prime, Rank Xerox, SEL, Smiths Industries, Sperry Univac and Texas Instruments.

TRAINING:

Courses in CORAL 66 are regularly offered by several organisations including John Bell, CEBG, Ferranti, GEC NCC, Preston Polytechnic and SCL. NCC's Real Time Program Design course was developed for the CORAL 66 groups, and runs for two weeks starting 3rd September and 18th November.

BOOKS:

Two books are available on CORAL 66. John Webb's "CORAL 66 Programming" and Halliwell and Edwards' "A Course in CORAL 66". The books are £5.00 each from technical bookshops or NCC — the publisher.

MASCOT:

MASCOT — Modular Approach to System Construction. Operation and Test — is an integrated approach to design, implementation and testing of real-time parallel processing software based on a form of modular decomposition.

Dial 999 in the West Midlands and you will be helped by the help of CORAL 66. The public have a new emergency system for the command and control of incidents. After successful trials for the Birmingham police local government reorganisation in 1974 required a large understanding of the system. The system was developed by the Birmingham police local government reorganisation in 1974 required a large understanding of the system. The system was developed by the Birmingham police local government reorganisation in 1974 required a large understanding of the system.

Incidents can be entered through VDU's entered in any of 32 subdivisions or the central control room with further VDU's in office control. The information eventually consists of details of the incident, action and results and is built up into an incident log. A sophisticated method of recall permits examination of previous incidents. The system also contains a series of indices which include notable landmarks and displays near misses so that operators do not need to know the exact spelling of all locations in the area.

The system operates on two Ferranti Argus 700s each with 128K bytes of core store and 4.5M bytes on disc. While one processor handles the notification of incidents, the other linked processor handles management information, which is available on a daily, weekly or demand basis. A particular feature of the system is reliability for in the event of failure, the second processor takes over incident handling. Peripheral input system includes a line printer and magnetic tapes which are switchable between the two processors. The system also handles message switching for the force's teletype network, and is linked to the police national computer at Hendon.

The operating system used is OSC 45 with enhancements by LEASCO.

CORAL 66 was used for all application programming and systems software.

Customers supplying have been incorporated in HPAC's latest version of their CORAL 66 Compiler which they have brought into line with the official blue book definition. The compiler, which runs on ICL 2 and PDP11 computers, has a base price of £12,000 but is a line update for existing customers.

Ferranti will supply a computer control system for the new BP Chemicals PVE plant being built at Bury South, Wiltshire. The system will be CORAL 66 based on dual Argus 700 processors. A particular feature is that the main computer can maintain control while further CORAL 66 development is possible through a test simulator.

Real Time applications of microprocessors may be developed quickly in a result of software package released by SCL. The system CENTEX (Construction, Execution and Test) allows programs to be developed on a PDP11 working under RSX-11M, before being loaded on to a target microprocessor.

As is now usual with computer releases, CORAL 66 is among the compilers initially available on two new systems from Rank Data, Norway's mini computer manufacturer. The NORO 100 with 16 bit words is a frontender to the NORO 500 which uses 32 bit words. Both machines can store main memory which in the case of the NORO 500 can be a massive 32M bytes supported by disc storage of 8.6 gigabytes. Rank mini computers are available through Richard Norton (NORO) of London.

RSRE has placed a contract with Computo Analysis and Programmers Limited to develop a set of assessment tests. These will be used to ensure that implementations of MASCOT conform to the official definition. MASCOT itself is a significant step towards standardisation of the approach used for the development of real-time systems for the Ministry of Defence.

Coral Data has released its version of the SOL CORAL 66 Compiler to run under the "Network Operating System" on its Cyber 170 and 170-700 series of computer systems. This will be available to all Control Data-Cyber customers world wide on a rental or paid up license basis.



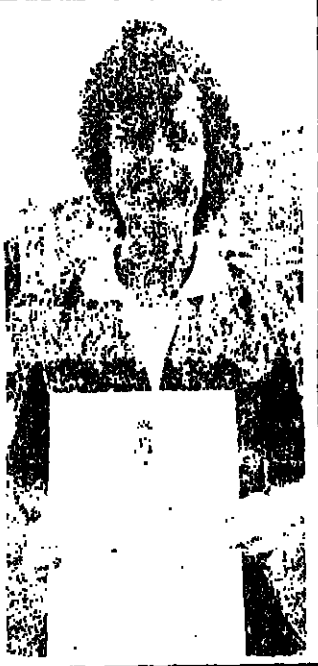
John Webb

PEOPLE AND EVENTS

Golden day for Kathy

PICTURED outside Buckingham Palace is Kathy Butler, secretary to the product division manager of Rediffon Computers, after receiving her Gold Award certificate from the Duke of Edinburgh. The occasion was the second memorable event for Kathy, who had also attended a special tea given by the Duchess of Norfolk at Annet House, where she received her Gold Award brooch.

The award, in the Duke of Edinburgh Award scheme, was given to Kathy for her participation in projects which included working as a national children's home, Crawley hospital and working with epileptic girls whom she took on holiday to Littlehampton. Kathy has since worked with these children independently.



Comshare board appointments

THE UK computer services company, Comshare, has announced the appointment of two deputy managing directors and nine new directors to the board.

Alex Jones, technical director, and Roy Poulter, sales director, have been appointed deputy managing directors.

The nine directors include Neil Bates and Steve Millward, Birtles was previously a divisional director in charge of finance and banking. With his promotion he has moved to sales in the South. Millward has been made director of marketing; he was formerly a divisional director for the Central region.

The other new directors are John Cuttling, Howard Garelick, Dion O'Leary, Brian Robson, Keith Talbot, John Taylor and Mike Tolitt. All of the newly appointed board members have been with Comshare since the company's early days and its European inauguration in 1971.

SSI announces key jobs

SSI International, formed this year by the merger of Ajax Computer Services and Social Systems Inc., has announced the appointment of three key personnel. The company was formed to market Simplan, the corporate planning and modelling system, in Europe, the Middle East and Africa.

Franklin Mint, Sales manager of SSI is John Savage, who was instrumental in marketing Simplan in the UK for the past year and previously worked for the Canada Systems group. He was one of the first to market Simplan in Canada.

A former member of the operational research groups of Barclays Bank and Air Products, Geoffrey Johnson, has become service manager of SSI International. He is responsible for the educational and application support areas of the Simplan system.

Soccer results

Division 1
Aldershot 10, Ipswich 1

Division 2
Dartford 1, Gillingham 2

Division 3
3M 3, ICL 1

Retail director

NEWLY appointed divisional director of the retail systems division of NCR is Bill Hawley, who was formerly manager of systems services, support division. He succeeds Jack Poole, who has taken up an appointment as director of retail systems for the Middle East and Africa.

George English, computer centre manager for Comshare in Cannock, has been appointed general manager of operations responsible for the overall efficiency of the company's network of regional service centres. Pat Fox has become Cannock centre manager. He was previously the bureau's network controller.

By Judith Morris

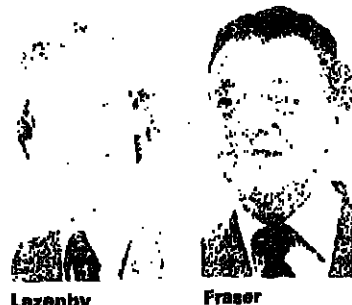
Challenge for charity

EMPLOYEES of computer installations are being challenged by the Thames Valley branch of the Association of Independent Computer Specialists. The association wants computer people to try to earn more money for charity.

The AICS is entering a team in a sponsored wheelchair push which is being held by the Windsor and Maidenhead District Sports Association for the Disabled, on July 14. Any employees of computer installations in the Thames Valley area who think they can raise more money than AICS should contact John Jenkins, 55 Moor Lane, Maidenhead.

George Eaton has been named as vice-president of engineering at Cubic Corp's defence systems division. Prior to this he was director of training systems and logistics for two years.

Chris Phelan has been appointed as sales manager of Cambridge Computer Services, which he joins after eight years with ICL as a salesman and sales manager.



Lazenby

Fraser

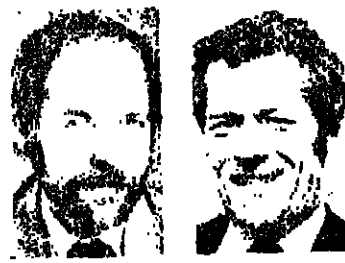
ICL director

ICL has announced the appointment of Donald Fraser as director of personnel, where he will be responsible for the personnel function throughout the ICL group. He reports directly to Peter Ellis, deputy managing director of business strategy and resourcing.

Fraser joins the company from NCR where he was a member of the board of directors and was director of personnel resources of NCR's UK company. Prior to this he was personnel director of Rank Radio International, and was also a member of the board of the Rank Organisation.

John Lazenby is appointed internal sales and applications engineer with Portescap UK. He joins the company from Prestelco where he was a member of the technical sales department.

John Priestley has joined Lowndes-Alex Computer Service as a sales executive, based at Warrington. He was formerly a senior systems specialist with Kalamazoo in Birmingham.



Griffin

Sherrin

David Griffin, after two years with Control Data as a salesman in the team which deals with central government, has now joined Computer Machinery Company as territory manager.

Michael Toumaysan has become central regional sales manager for data communications with Penril Corp. He last worked for Dynatech Data Systems as regional manager.

Simon Nieboer has been appointed general manager of DRG Systems Supplies. For the past three years Nieboer has been a marketing manager for DRG Flexible Packaging, of Bristol.

Paul Adams has become the first sales executive of Micro Focus. He joins the company from ICL, where he was account sales executive. In his new position he will be responsible for marketing the company's compiler for microcomputers on a worldwide basis.

John Owen has been appointed managing director of Wilcox Computers. A chartered accountant, he joined the company as company secretary. Norman Wilcox, the former managing director, is now chairman of the board. Formerly project leader with British Aerospace, John Walmesley has joined Wilcox Computers Research and Development team.

Chairman of Project Managers

THE Association of Project Managers (Internet UK) has appointed a new chairman, Len Connor of the DHSS. He takes over from Herbert Wilson, who reported at the recent AGM both increased membership and a wide range of activities over the past year. The events included weekend schools, seminars, and an international study conference which took place in Jersey.

DIARY

JULY 12
Education for the future IV: education by computer? ASE, CET, SCST, Bradford University, Bradford, 9.30.

JULY 16-18
Operational data security workshop. Operational Data Security Corp Hotel Zurich, Zurich, Switzerland.

JULY 18
Who audits our freedom? IDPM, Pearl and Dean Studios, Broadwick House, Broadwick Street, London W1, 18.00.

JULY 19-20
IBM CUA Local authorities group. County Centre, Cambridge.

JULY 22-27
Workshop on program transformation. UCL, Friar-church, Broadwick House, Imperial College, London.

AUGUST 6-8
Pattern recognition and image processing. IEE Computer Society, Chicago, Illinois. Contact: Pattern recognition, PO Box 558, Silver Spring, MD 20901.

AUGUST 12-22
Third Rocky Mountain Symposium on microcomputers. IEE Computer Society, Platteau Park, Colorado. Contact: Michael Tindall, Dept of Computer Science, Colorado State University, Fort Collins, CO 80523.

NCR long drive championship

THE NCR national long driving golf championship has attracted a record entry this year, with over 2,750 participants and the longest qualifying drive being 310 yards, compared to last year's winning drive of 295.

The championship, which is sponsored by NCR and organised by the Journal Golf World, is in aid of the Golf Foundation, and is open to both professional and amateur golfers. The Northern heat will be held in Manchester on July 13, with the three remaining regional heats being held in August and September. The final will take place at Stoke Poges Golf Club on October 1.

Tony Greenberg, a former sales executive with NCR, has joined Rediffon Computers as senior territory manager for central accounts North East. Paul Hamilton has become senior territory manager for the South-East branch. He was previously accounts manager with NCR.

Joel Martin, formerly manager of communications of Documentation Inc, has become vice-president and general manager of the company's subsidiary, Docuprint.

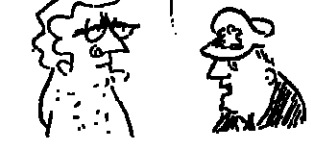
Harvey Ulljohn has been appointed product manager for Sintercom for the company's products, the Dennison range of label printing systems and the Perkin-Elmer 3500 programmable work station. Ulljohn founded Pragma in 1971 as a UK distributor of American manufactured peripherals and terminals.



GIVEN THAT A FEW
DP PEOPLE CAN
BRING BRITAIN TO
HER KNEES



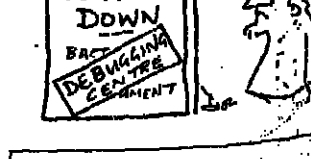
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CHANGED ITS
FUNCTION...



...TO THE MODD!

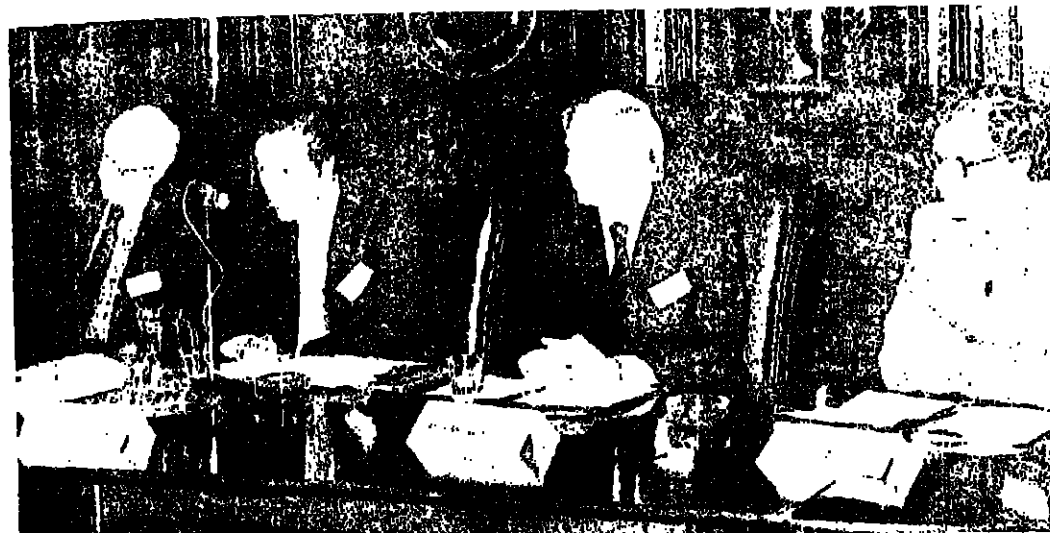


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Announcing TSB Computer Services' new consultancy division are (left to right): Bruce Camm, manager of external services, TSB Computer Services; Robert Brotherton, general manager, TSB Computer Services; Colin Sommerville, deputy general manager, administration, TSB Computer Services; and Peter John Down, director of services, consultancy division, TSB Computer Services.

TSB sets up financial and networking consultancy

WITH a view to capitalising on its considerable expertise in online real time and financial applications, TSB Computer Services of Cheshire has established a consultancy division.

Plans to offer consultancy services to financial institutions and anyone establishing a real-time network both in the UK and abroad. Overseas it intends to concentrate on the Comecon countries, the Far East and selected African states, but expects to get work in the US as well.

TSB Computer Services has been operating for 10 years, and now handles computer applications for 65% of the Trustee Savings Bank group. It has served the Altrincham Group covering the whole of the north of England and Wales for several years, and has now been joined by the West of England group.

Since 1972 it has run an online real-time service with counter terminals installed in TSB branches, based on five ICL System 4/72 and 4/70 mainframes installed at computer centres in Bootle, Kidderminster, Manchester and York.

Eighteen months ago it became the first UK customer for the Univac 1100/80 large-scale mainframe, having decided to concentrate all the central processing in a single, new, computer centre in Wythenshawe, Greater Manchester.

NEWS IN BRIEF
Seven times more storage

AMONG the announcements accompanying IBM's 4300 launch is the fact that the new 3370 discs can also be attached to a System/38. Offering a sevenfold increase in maximum possible storage — up to 2280 megabytes with four 3370s — the new devices offer a cost per byte of one twentieth that announced with the System/3 Model 8 in 1974.

Quick assembly

TO help eliminate inventory and production control problems, Hubbard Engineering, the transport refrigeration and vehicle air conditioning company, has installed a Nixdorf 88/70 minicomputer at its headquarters in Otley, Suffolk. Hubbard is hoping that the system will allow it to have the necessary components — from a range of 7,000 — available for quick assembly.

Store group order

FURTHER point-of-sale equipment installations have been carried out by department store group Owen Owen, which has bought 44 NCR 2151 PoS terminals.

Plans are being laid to keep the System 4 centres in service with other work once the real-time network has been transferred to the 1100/82 system.

After selecting the mainframe, the company went out to tender for terminals to replace the existing Olivetti devices and finally chose modules from the new Burroughs banking terminal line.

A rigorous step-by-step approach to hardware selection — developed to make sure that the right machine to replace the System 4s was chosen, refined during the terminals selection process and since used in the choice of an automatic teller terminal for a pilot trial — is one of the first services on offer from the new consultancy. It consists of a set of three documents, and one day's consultancy is included in the price.

Five key areas have been identified to spearhead the services offered by the TSB division. It will offer advice on strategic issues — the vital question of whether an application is worth putting on a computer or not. If so, it will then provide planning and design assistance, and transfer techniques it has developed for its own use. One of these is optimisation of operating systems for a transaction processing environment.

In the case of the Systems 4s, TSB achieved a remarkable increase in the transaction handling capacity — 14 transactions per second instead of six — by stripping out redundant parts of the J operating system.

Similar optimisation is now under way on Univac's OS/1100, and the projected capacity of the 1100/82 system is 70 transactions per second.

The consultancy will also be prepared to adapt existing TSB systems — and the availability of the low-cost 1100/80 computer from Univac will make a subset of the new system particularly attractive — but there are no plans to undertake major software development contracts.

Training, and experience working with the TSB team on current systems will also be offered — and has already been given to employees of one overseas client.

TSB has not identified the client, but it is understood to be one of the major Iranian banks, which is also equipped with a Univac 1100, and implemented a pilot online system with TSB assistance. The collaboration has been suspended since the homecoming of Ayatollah Khomeini to Iran, but may restart once order is restored.

In general, TSB hopes to work with a local partner on foreign contracts, and sees good prospects for business in Eastern Europe with banks which are ICL customers. This could involve transfer of expertise and possibly large parts of the Sys-

tem 4 system in partnership with ICL.

Target customers in the UK include building societies, credit unions and friendly societies, and also organisations in the retail and distribution fields.

Solicitors say plans for registration of data banks are ill-considered

UNCERTAINTY and confusion over registration of data banks will result if the Data Protection Committee's proposals are implemented as they stand, claims the Law Society in a preliminary memorandum on the proposals to the Home Office.

Many aspects of the recommendations have not been properly thought out and in places conflict, the Society asserts.

The Law Society, which is the solicitors' professional association, declares itself in favour of the principle of having data protection legislation, and of the flexible approach proposed by the DPC whereby different applications would have different regulations covering them. However, it points out that of the 50 different classes of application listed in the DPC report, some are defined by type of data, some by the type of user, and some by the technology.

"This seems," the memorandum says, "to open up a prospect of a multiplicity of different codes of practice which may conflict or overlap, with the possibility that several different codes might govern a single application." Thus users will not be able to tell which regulations they must follow. This needs to be clarified as a first priority, the Society says.

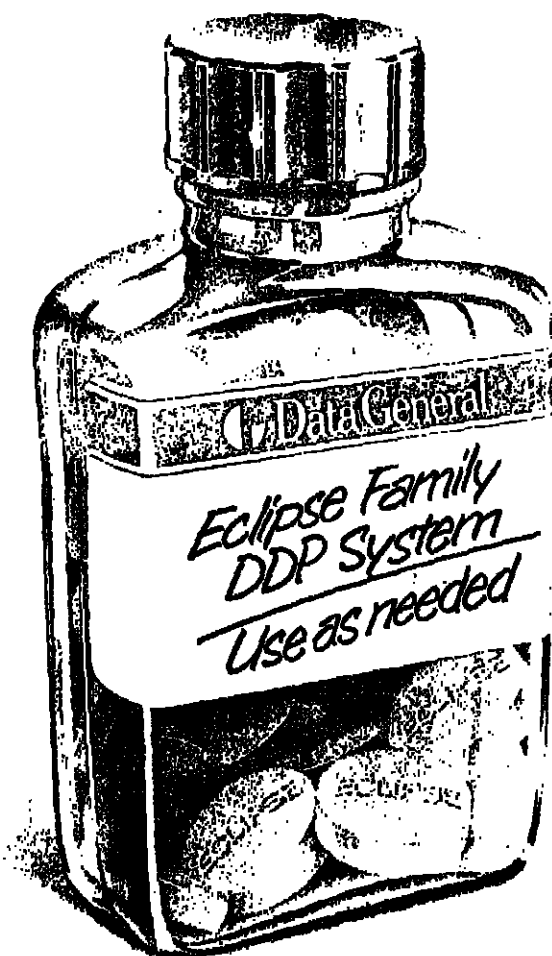
There is also confusion, in the Society's view, over what applications would have to be registered and whether unregistered applications would be regulated. It proposes a two-tier registration system, with the lower tier for minor applications for which no code of practice is needed.

The Society expresses concern over the principles that data should only be used for purposes authorised when it was collected. There are many appli-

cations where no purpose is specified, it says, and would prefer the principle to be "personal data should be handled for reasonable and legitimate purposes only." The Society does not, however, go deeper into the question of how the vague terms "reasonable" and "legitimate" would be defined.

The Society is also worried about how judicial control over data protection would work, since the powers the courts would have over the Authority's actions are unclear, and the rights of a data subject who thinks he is not being properly protected are similarly confused. There would be a need for effective control over the "very extensive" powers of the DPA.

Difficulties are envisaged over conflict between the DPC's "flexible approach" and more rigid rules that may be laid down in international conventions.



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MICRO NEWS



Larry wins factory for a year

SOME people win on the pools, some come up on the Premium Bonds, but college lecturer Larry Rowe has managed to win something completely different — a factory.

It will be his rent-free for a year as the winner of the Bowthorpe Enterprise '79 competition, organised jointly by Norwich City Council, Danco Securities, and the Norfolk Small Firms' Information Service.

The object of the competition was to find a new business that had sufficient development potential to create new jobs in the Bowthorpe employment area.

Rowe, seen here (right) with Bowthorpe councillors Len Stevenson (centre) and Ralph Roe (left), won the competition with a micro-based educational computer system. Bull, he says, "to a price schools and colleges can afford," the system is designed to provide practical "hands-on" experience in electronics and computer science.

He has been producing them for two years in his home in Portland, Norwich, and in that time has sold systems worth some £20,000. Now, with a 3,870-square-foot factory, he aims to build up the business. He does not, however, intend to give up lecturing.

Show's switch to small business systems was a great success

THE emphasis placed on small business systems by the organisers of last week's 1979 Microcomputer Show, a major switch from the theme of "Do-It-Yourself" that had prevailed in the last two years, proved a considerable success.

More than twice the number of people, 2,500 compared to 1,000 last year, packed into the Bloomsbury Centre Hotel on the first day of the show to sweat it out on the tour round the stands. The situation was not helped by the hotel's air-conditioning breaking down.

In fact it says something for the growing reliability of microcomputer systems generally that, despite the heat and humidity of the exhibition hall, none of the equipment on show seemed to suffer. The same

could not always be said of the humans.

Perhaps that was why one of the popular stands at the show was that of Nascom Microcomputers. Marketing director Kerr Borland and his team did a roaring trade in tee-shirts.

The firm was also generating interest with the first public showing of the Nascom 2 kit, together with a new addition to its add-on range of products, a colour board. This uses 6K bytes of static RAM for high resolution work, or 3K bytes for low resolution.

Sixteen primary and complementary colours are available, including black and white, and the screen area can be programmed for up to six different programmable colour squares. Both foreground and background colours are independently selectable.

Keen Computers and Personal Computers took stands to exhibit the Apple II microcomputer, and both were showing systems working with non-Apple high capacity storage systems.

Keen was showing a very compact hard disc system from Corvus Systems, which the company is distributing in the UK. Using the Apple disc operating systems directly, so that there are few interfacing problems, the disc offers 10M bytes of storage per drive. Keen is selling them for £3,500.

Personal Computers was de-

monstrating a 1.2Mbyte dual floppy disc drive, called the DA 8000. The Dutch-made system, now being distributed in the UK by Personal Computers, uses single-sided, double density drives offering 630K bytes per drive. The price will be around £2,400.

Happier news of the Processor Technology Sol computer was to be found on the Comart stand. Following the company's demise in the US recently (CW, June 28) its UK distributor, Comart, has bought the entire work in progress for the Sol's video display monitor board. Offering both upper and lower case characters on displays of up to 64 characters by 18 lines, it formed the heart of the Sol-Star word processing system.

Comart is to continue marketing the system, which was based on a Sol computer and North Star microdisc, only now it will be configured around a North Star Horizon processor, the video monitor board, and a monitor display, with a choice of printer.

A new UK designed and built system intended for business applications at the show was the EuroC. Manufactured exclusively by Plessey Microsystems for Euro-Care, which has prepared the software for the system, it uses an 8080A processor to run 64K bytes of RAM and two double-sided single density 8-inch floppy disc drives offering around 1 Mbyte of store.

Rules for crash-free software testing issued

JERRY THOMPSON, managing director of Shade Computer Services, has now provided a full set of rules for his challenge to the microcomputer software industry to produce crash-free programs (Micro News, June 21).

The £100 prize he is offering will be paid to the first writer of a program that survives a series of tests he has devised. Entries should be sent to Jerry Thompson at 108 Westington Park, Caine, Wilts, enclosing a stamped-addressed envelope.

According to the rules, all software submitted must be written in Basic for running on a microcomputer system in a typical commercial application for a small business. The material submitted must include the actual software in a suitable form for running on a test system, detailed specification of the machine configuration required, complete documentation as supplied to the user, and software maintenance documentation.

The tests he has devised will cover a variety of areas, including matching of user

documentation to the actual software, consistency of user responses required by the software, tolerance of the software to user errors, together with other tests for specific applications, such as numerical accuracy of results.

Immediate failure "modes" will include the display of a basic error message such as EX-TRA IGNORED, assumptions made by the software to user responses not detailed in the user manual, the display of a system message not requested by the software and not detailed in the user documentation, and numeric overflow conditions.

Any software that is claimed to be transportable will be transported. In this situation, any software changes will be judged as failure.

For a fee of £10, Thompson will provide a short report on the failure to the writer, and a more detailed report will now be available for £20. According to Thompson, a maximum of 20% of these fees will be retained to cover costs and materials, while the remainder will be paid to the Save the Children Fund.

Commodore figures 'record'

RECORD figures for revenues, earnings and earnings per share have been claimed by Commodore for its third quarter financial results.

Net sales for the quarter ended March 31, 1979 were \$16,443,000, a rise of 88% over the same quarter last year. Net income was \$1,462,000, a 78% increase. Earnings per share for the third quarter were \$1.01, (compared with the \$0.80 for the 1978 equivalent), which represents a gain of 88%.

Commodore is currently manufacturing and shipping more than 3,000 Per computers per month world-wide.

Commodore's business in the UK has moved into its new headquarters at Leighton Road, Slough, and the company has sold off its factory in Englecliffe, Teesside.

The company is also claiming



COGARVIEW

On the threshold of great strides in health care

I HAVE talked before in these columns about the computer industry's historical predilection for taking the easy way out. That is, for addressing itself to problems that require relatively little effort in solution, and ignoring those in which the computer could provide unparalleled benefits to the user but dubious profitability to the supplier.

It is because of this predilection, for instance, that computers are so widespread in industry and so rare in education. Industrial problems are amenable to fairly simple mathematical processes and can be replicated with minor adjustments almost ad infinitum, conferring increasing profitability with every fresh sale. Educational systems are hard to devise, would have to be virtually tailor-made for each school or class, would have no export potential, and are hence ducked by the wise computer man.

Health care, however, probably provides the best example of the industry's inability to handle the real problems of society. Virtually ever since the computer was invented, study groups, committees, working parties and plain individuals have been planning applications for which the power of the machine is ideally suited. Yet in the main, computers in health care are restricted to quasi-industrial or quasi-commercial roles — keeping records, billing insurance companies (outside the UK, that is), scheduling nurses' duty periods and so on.

I think times are changing, however. In the first place the microprocessor is bound to make automated laboratory equipment almost universal; the physical insignificance of the computing component of future instrumentation will make the concept a lot easier to accept.

There will be no more bulky minicomputers sitting around on benches and desks, no more cobwebs of cables around the room. It will all be a lot less alien. The micro, too, should make its mark in the non-diagnostic applications, especially where the administration of health care is at once highly bureaucratized and highly decentralised — like Britain's own National Health Service. The keeping of records on a simple, stand-alone system, surgery by surgery or clinic by clinic, should be a practical proposition.

But the future of health care computing is not predicated only on the advance of the micro. Health care is a major industry which in many developed countries threatens to break down under the weight of its own administration.

Britons tend to think of this as a purely NHS problem, but not so. In Germany almost the entire population is gradually being kitted out with a personal OCR card which will speed up the processing of claims on patients' insurance companies by doctors. Formerly the doctors made out their bills by hand and posted them off to the insurance companies, where an expensive army of data preparation staff had to key them in.

As the science of database management improves, I would also expect to find a proliferation

of medical information systems along the lines of the National Library of Medicine's online system in the US.

This is a dial-up system which allows busy doctors to access a biomedical bibliography maintained by the library. Now seven years old, it is available via Tymnet and Teletel as well as over direct phone lines and has over 1,000 medical institutions across the US, though as yet very few in private practices.

The main file is called Medline, and is an online version of the library's monthly publication Index Medicus, which is a reader's guide to the medical journals. There are also a number of files relating to the library's book stock and three which are maintained in conjunction with the National Cancer Institute, which together give the latest details of cancer research and treatments.

Toxline is an outside-maintained file on poisonous chemicals, as is Rtecs — except that where Toxline is purely bibliographical, Rtecs has a computational capability.

Automated diagnosis or self-diagnosis are currently either at a very embryonic stage or available only as a gimmick, but they could become a standard part of health care, relieving highly skilled doctors and nurses of the tedium of the relatively undemanding question-and-answer routine.

Automated diagnosis consists of patient interrogation via VDU (invariably preferred to teletypewriters by patients, though no less accurate: why should this be?) to establish a basic model of the patient's general health and the specific nature of his or her current complaint.

The software itself is not particularly hard to write. The problems are human. A keyboard which allows more sophisticated replies than "yes," "no" and "don't understand" cannot be handled by many patients; a keyboard which allows only these three answers may frustrate the more intelligent. In experiments at Glasgow's Southern General Hospital it has been found necessary to accommodate two keyboards which can be exchanged according to the patient's ability to cope.

At the present state of play the computer's error rate in diagnosis is under 20 per cent — about double that of senior specialists.

This is probably not acceptable in medical terms, although economically (considering the time cost of using top specialists to interrogate patients on simple illnesses) encouraging.

Self-diagnosis is a more contentious matter. There is a great craze for home blood-pressure machines in the States just now, one that is deplored by physicians who contend that blood-pressure reading is a matter of interpretation as well as mechanics.

But an Asahi subsidiary in Japan has now produced an improved sphygmomanometer which is claimed to eliminate the guesswork and adjustments required by conventional models and make home blood-pressure reading an accurate

process for the first time.

Another new product in this field, the computer-controlled SKS 60 blood chemistry analyser of Hycel Inc, Houston, claims to improve automated blood-analysis machines used in hospital laboratories out of all recognition. Until now, such equipment has been hampered by a universal inability to provide accurate measurements of those blood chemicals that show up in very high or very low proportions outright, with a subsequent need for extensive re-testing.

But the Hycel machine, since it is based on an advanced photo-optical detection system, is said to be able to pick up chemical traces that are too great or minute to be read accurately by other analysers and, linked online to a computer, can perform up to 15 tests simultaneously.

But it is self-diagnostic devices which probably carry the real promise of improved health care. In the wired city of the future, will homes be equipped with basic diagnostic aids like the home blood-pressure

reading machines and patients entrusted universally to check themselves out before calling a doctor? Why not? Maybe the instruments will also have a telecomm capability so that they can be plugged into the phone line and read off by the doctor at a remote location, who can advise on treatment (if any) without actually examining the patient at all.

The medical profession may shudder, but the technology to achieve this probably exists already. It's just a question of whether we want to apply it.

Hertz expands UK network

A MAJOR automation programme is under way at car rental firm Hertz which eventually will involve links to a Univac 1100/80 mainframe in Oklahoma City.

As a first step, rental offices in key locations like Marble Arch and Heathrow airport, and similar outlets in France and Germany, are being equipped with Olivetti TC800 systems, including full keyboard, printer, floppy disc unit and display.

Initially the TC800s are being used just to calculate the amount owing when the customer returns the car. Hertz at present does its volume processing on the BOC Datasolve bureau and also has T1 990 minis installed at sites in the UK and Europe.

Creation of a customer contract at the time of hiring is still done entirely manually, but Hertz plans to put in further hardware to handle this too.

The Univac 1100/80 system is replacing RCA Spectra 70s and runs the Hertz reservation system which will also be extended to Europe.

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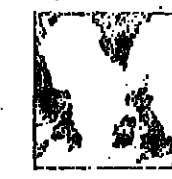
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SYSTEMS ANALYST

Salary Grade — A.P. V £5,565/£6,066 (inc. supplement)
Due to internal promotion a vacancy exists for a systems analyst to join one of our Project Teams.
Applicants should have at least 2 years' programming experience and systems design experience. They should be able to demonstrate an ability to work in a team environment. A professional qualification would be an advantage.

COMPUTER PROGRAMMER

Salary Grade — A.P. I/IV £3,861/£5,403 (inc. supplement)
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Applicants should have at least 2 years' experience of programming in COBOL. A wide variety of local authority work is undertaken on behalf of the Region and three District Councils. Current projects are excellent. Please apply in person or by post to the Salary Grade. Consulting directly or indirectly with the Region.
Applications will only be considered if they are obtained from Regional Personnel Office, Fife House, North St. Glenrothes, Fife, KY6 2JL. Tel. 0475 6. To whom completed form should be returned not later than 30th July 1979. Please quote Ref. Number RP/49/58/CW.

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Applications stating age, education, qualifications and experience should be sent to:

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222 Marylebone Road,
London NW1 6JL
(quoting reference RB201).

UNIVERSITY OF ESSEX Department of Electrical Engineering Science

Senior Research Officer

to work on all aspects of microprocessor based projects in the Essex Electronics Centre. The Centre undertakes a wide range of projects concentrating on the application of electronics to problems encountered in industry.

Candidates should be qualified in electrical engineering or computer science to degree level and have practical experience in industry would be an advantage, but not essential. This post offers a chance to recent graduates to be involved in real industrial problems while benefiting from an academic environment. Salary will be in the range £4,232 to £7,145 according to experience. Appointment immediate.

Applications including a curriculum vitae and the name and addresses of two referees, should reach the Registrar (AG/88/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained by 2nd August, 1979.

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Career openings have arisen at our Computer Centre based at New Southgate.

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The main programming languages are COBOL, FORTRAN and PLAN. Appropriate training will be given as required. Flexible system around a 38-hour week.

Applications forms and further particulars from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR. Telephone No. 01-262 8011 Ext. No. 261 quoting the appropriate reference number. Closing date: 27 July, 1979.

JBA

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*On moving to Holland, the top 35% of gross salary is exempt from tax — extremely valuable! If you would like to contribute to the project and would like a permanent, career-orientated position into the bargain, please now for more detail.

Contact: Andy Wright

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Contact: Andy Wright

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The successful candidates will be fully conversant with technical internal software, debugging and tuning. The consultancy status truly reflects the level of the positions, where technical knowledge will be sought and ability fully utilised. Long term prospects and high rewards are offered.

Contact: Mike Creamer

For further information on any of the above vacancies, please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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c. £7,000

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For further details and an informal discussion

Contact: Jim Baker

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Contact: Mike Creamer

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West London

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Contact: Margaret Stevens

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SYSTEMS ANALYST

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ANALYST/ PROGRAMMER

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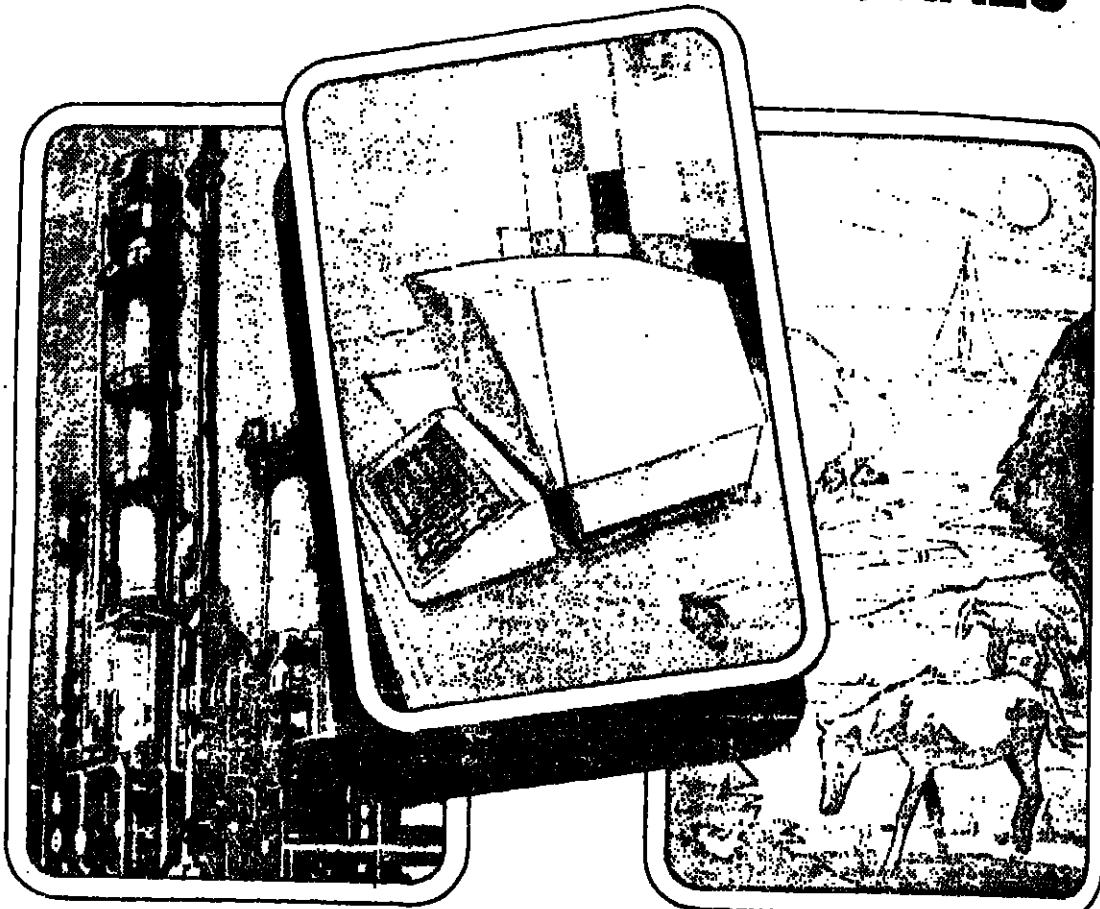
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Systems Analysts

You will be working closely with users who are engineering professionals, and you should have good communication skills and the potential to lead a team in the future. A degree in an Engineering related subject is essential with at least two years experience in a manufacturing or technical environment. A programming background would be an advantage.

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This is a unique opportunity for a proven engineer to take overall responsibility for implementing, commissioning, developing and supporting all communications on site. You should have a degree in Computer Science or equivalent and at least 5 years experience in telecommunications and/or process control software systems. Experience of Process computing and time software systems, or IBM Terminal teleprocessing systems would be an advantage.

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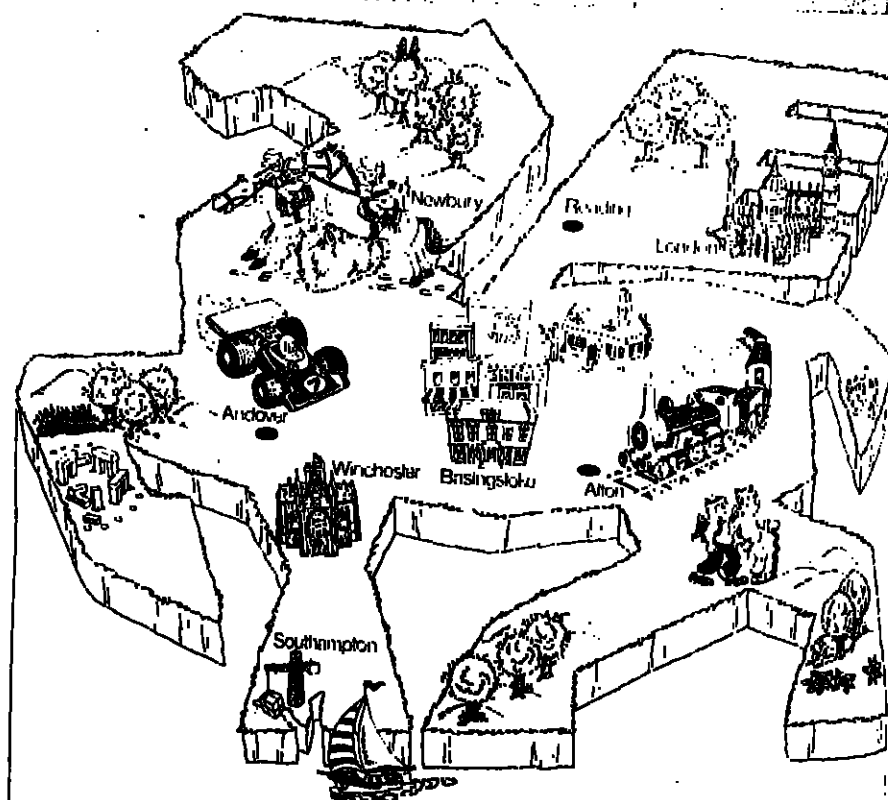
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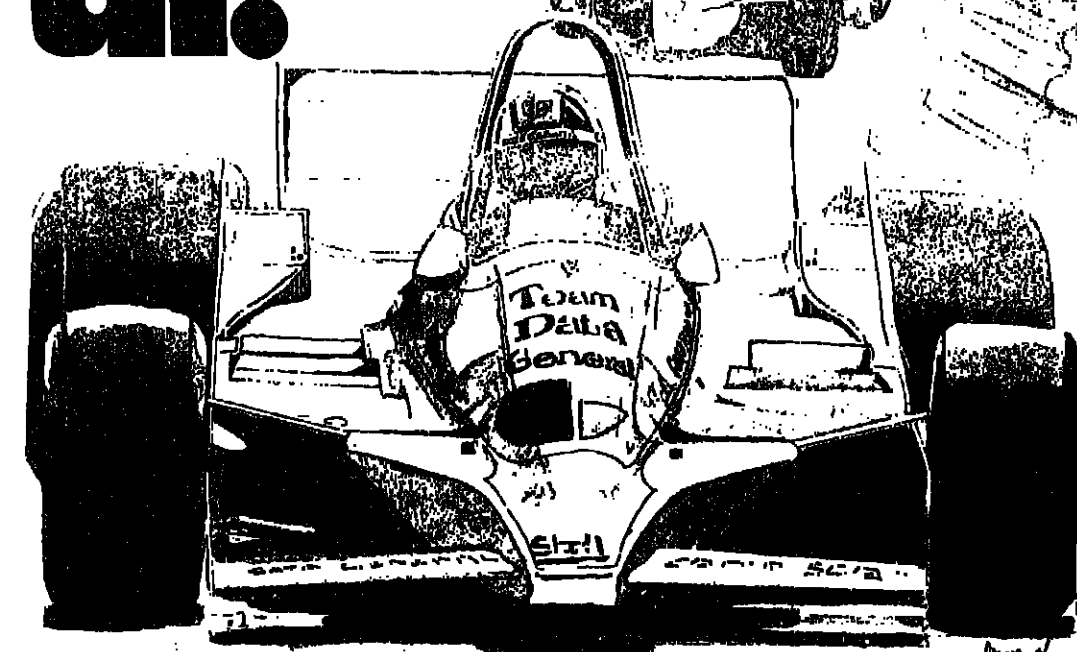
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Company: Merriott Mouldings Ltd
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North West, c. £9,500

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C.C. Moore, Ref: 24188/CW

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The installation consists of twin ICL 2960 DME computers with 7804 front end processors operating under GEORGE 3 supporting a comprehensive batch and communications work load.

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Terms and conditions are those expected of a large organisation and include generous holidays, sickness benefit and a contributory superannuation scheme.

Applications on form AF/1 obtainable by ringing Bristol 646236 (during office hours) or from the Personnel Manager, Bedminster Down, Bridgwater Road, Bristol BS13 8AN, to whom they should be returned quoting vacancy reference number 411/79/CW by not later than 31st July, 1979.

Central Electricity
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ARCHITECT'S DEPARTMENT
Salary up to
£8,348 inc.
(REF: F.31)

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Commencing salary dependent upon age, qualifications and experience. In approved cases, assistance will be given towards reasonable removal and resettlement expenses. A 19-day four week cycle of hours is in operation.

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The reason is simple. We know that we are successful only if our staff are.

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(Ref PS/32/CW) For mainframe, minicomputer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design or team management. Substantial knowledge is required of either high level language implementation on a leading mainframe or assembler language development on DEC, Data General or other leading minicomputers. We are especially interested in experience of:

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- distributed systems
- data communications
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For application forms and job specifications please apply in writing enclosing a large stamped addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry CV1 5PE, returnable within ten days of the appearance of the advertisement.

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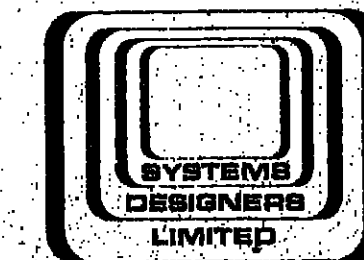
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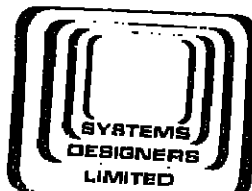
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Dow Corning Europe
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to £15,000 pa + car + accommodation

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Analyst Programmers and Programmers up to age 35 with COBOL language experience are required for the development and implementation of new systems in Contract Management, Inventory and Accounts Control.

Salaries, which are tax free, and conditions are extremely good for men with a flexible approach to life and interested in pursuing a demanding but very rewarding career in the Kingdom.

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This appointment offers an interesting and challenging position and would suit a talented person who has the ambition to progress within a company which has a fast moving planned D.P. development programme.

Salary will be negotiable and in addition we offer first class employment conditions. Pension and Sick Pay Scheme.

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SSRC Survey Archive

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— Management of Large Survey Data Bases

Applications are invited for the post of Research Officer (Grade IB, salary scale L4775-L5488). Appointment will be from 1 October 1979 for a maximum of two years. Applicants should have a good first degree in the social sciences, a computing degree and be familiar with the operating environment of the Social Survey Unit.

Applications (three copies) including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/US/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SD, from whom further particulars may be obtained, by July 31st, 1979.

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COBOL - RPG II - PL/I -
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ICI Fibres Division is among the leaders in the application of the most modern and sophisticated electronic technology to the control of synthetic fibre production. Major new initiatives in this field mean that we have vacancies for Design Engineers to work in the following sections:

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Innovation is the key to our activity and we can promise interesting and varied work from the project definition stage through to plant commissioning.

Applications are invited from Engineers/Scientists, preferably graduates under 30, who can demonstrate an appropriate track record. Above all we are looking for people who can make things happen and who can go on to fill senior management vacancies over the next 5 - 10 years.

Assistance will be given on re-location. Both Harrogate and Gloucester are situated in pleasant rural areas and offer reasonably priced housing and excellent amenities. For the right sort of applicant, total earnings can range up to

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Please reply with full career details to:

D A Garrett
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ICI Fibres, Hookstone Road
Harrogate, HG2 8QN, North Yorkshire

Applications are welcome from both men and women.



JBA

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£10,000

We have been retained by one of the largest Software Houses in Europe to assist with the appointment of three senior professionals into their consultancy group. The work includes taking responsibility for sophisticated projects, carrying out feasibility studies and implementing complex systems in a wide range of locations throughout the UK.

Candidates must have at least six years in the d.p. industry with four spent in the design and development of commercial applications as a project manager or DPM. Knowledge of database and real-time techniques would be an advantage.

Salaries are negotiable according to experience. Company benefits including bonus and relocation expenses. Overseas opportunities also exist.

For an informal discussion please contact Jim Baker,

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1.
Tel: 01-491 4478.

HERTFORDSHIRE COUNTY COUNCIL FINANCE DEPARTMENT

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Salary range £3,861-£4,275 plus 14% shift allowance.

An operator with at least 2 years' experience, some in a supervisory position, is required to fill this vacancy in our operations team working 2 shifts, 5 days a week.

The installation comprises a 1M byte Criterion 8580 providing virtual storage, under VRX operating system and interactive program development. Current developments include a major on-line stock control system and the installation of mini-computers as part of a planned distributed processing network.

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Applications (no forms) giving details of experience, age, qualifications etc. to the County Treasurer, County Hall, Hertford, quoting reference CP.9, by 27 July, 1979.

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Our Contract Staff Division is headed by David Garnsey and he and his team of consultants make a point of getting to know the people that work for us and keeping in regular contact. Amongst our current requirements are the following contracts.

U.K.

Programming Team Leader. An in-depth knowledge of IBM PL1 & some CICS, required to lead a team of three programmers for a project duration of four months.

Systems Designer. A solid background in VMEB required by our client in Central London. This contract will initially be for three months.

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Programmers. Interesting project for two programmers with DEC Assembler experience on an RT11 operating system, to work on a Stock Control Application.

Systems Analyst. With good Production Control experience, preferably IBM System 3, knowledge of MAAPICS would be advantageous.

Analyst Programmer. DEC BASIC + 11 experience required by City based Client for 6 month contract.

Working for John Goldsmith you get all the benefits and security of a good permanent job plus permanent health insurance, advice on taxation and company formation, holiday pay, subsidised medical insurance and - of course - prompt payment.

Maybe you are on contract, or between contracts, now. Or perhaps you've always wanted to try contract work, but have somehow never got round to it. Let us tell you in detail of the advantages of working on contract. Now is the time to act. Call David Garnsey or Ray Thomson on 01-828 5356.

John Goldsmith Computer Professionals on Contract



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Telephone: 01-828 5356 - 24 hour answering service.
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A Company of the Provident Financial Group.

U.K. cont.

Analyst Programmer. With an in-depth knowledge of Honeywell Level 6 Data-Base.

Programmers. IBM Cobol (OS/VS1) programmers with Environ 1 experience required for a 6 month contract.

370 Assembler Programmer. Applications or systems programming experience + banking background, 5-month contract.

HOLLAND

Systems Analyst. 1 Year project for Dutch speaking Analyst with PDP 11 experience.

GERMANY

Systems Programmers. German speaking a knowledge of D Bomp would be useful.

BELGIUM

Analyst Programmers. French speaking a knowledge of CICS would be useful.

International
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to High Technology

Europe's leading software house are expanding into exciting new areas. They are currently forming a team of high calibre technicians to be at the forefront of this development and require:

CONSULTANT PROGRAMMERS & SENIOR SYSTEMS PROGRAMMERS

At the consultant level you would need at least 3 years' experience in design and development of small systems preferably in the Finance or Communications fields plus the capability to control a small technical team.

At the senior programmer level you would need to have had some small systems/mini experience.

Both roles offer a unique opportunity to join the most comprehensive force of mini/micro specialist within one organisation in the U.K., and promotion prospects are excellent.

Salaries range from £6k to £8.5k with associated big company benefits.

Please telephone our London office to arrange an immediate interview quoting Ref. NOR 03.



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An experienced Calcomp (or similar) operator is required to operate our Calcomp 748 flat-bed and 1051 drum plotters.

An excellent salary will be offered. Modern offices and friendly atmosphere. Opportunities for progression into data processing.

Forward résumés to:

Data Processing Manager
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SYSTEMS PROGRAMMER

A vacancy exists in our Head Office in Edinburgh for a Systems Programmer to assist in the conversion from OS/VS1 to MVS; this is necessitated by the rapid expansion of our TP network which at present has over 130 terminals spread over 10 locations. Experience of MVS and/or IMS would be desirable, although not essential; the selected applicant could expect an early date to take over particular responsibility for some aspect of our DB/DC software while working within a small team of software specialists.

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Please write or phone for application form or further particulars to Mr. J. M. Gibson, Recruitment Officer.



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CROYDON

Salary within range £5163 to £6042 plus current self-financing productivity payment.

Do you have 2-4 years' operating experience on IBM mainframes but would like a change from shift work? Then why not consider joining Segas as an Operations Support Assistant within the busy computer installation at Croydon comprising 3032 and 3031 CPUs and a large scale TP network.

Essential qualifications are a minimum of two years' operating experience using OS/VS1 and/or VM/370, a thorough knowledge of OS JCL and utilities and the ability to communicate with both technical and non-technical personnel.

Duties will include problem troubleshooting, JCL development, documentation of operating procedures and liaison with Systems Development and Technical Support staff.

For further information phone Paul Calver on 01-886 9467 (daytime) or 01-854-9956 (evenings), or write giving full details to: Personnel Manager, Segas, Segas House, Katherine Street, Croydon CR9 1JU.

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DOCTORAL SCHOLARSHIP
New Cross, London
SE14 6BW
School of Science and
Mathematics

Applications are invited for the post of

TECHNICIAN GRADE 4

in the Mathematics Department to maintain and supervise use of computer equipment and develop software for micro-computer system. Knowledge of basic and assembly language programming essential. Required for 1st September, 1979, or as soon as possible thereafter. Salary on scale £3,747 x 5 increments to £4,233 per annum inclusive of London Allowance. Write for further particulars to the Personnel Officer to whom applications should be submitted by 27th July, 1979.

Lothian Health Board

SENIOR SCIENTIFIC OFFICER

Applications are invited for the post of Senior Scientific Officer, based in the Respiratory Laboratory, City Hospital, with some duties at the Pulmonary Function Laboratory, Royal Infirmary of Edinburgh and the Pulmonary Function Laboratory, Western General Hospital. The post would be of interest to suitably qualified applicants with special experience in on-line real time computing applications in medicine or respiratory physiology. Whitley Council conditions of service apply. The Laboratory may be visited by appointment with Dr. G. J. R. McHardy, telephone 031-447 1001 Ext. 394.

Further particulars on request. Applications, which should be typewritten, giving particulars of age, qualifications and previous experience, together with the names, addresses and telephone numbers of three referees should be lodged with the Secretary, 11 Drumshough Gardens, Edinburgh EH3 7QQ, by 27th July, 1979.

COMPUTER SUPERVISOR SYSTEMS ANALYST

We are Towler Hydraulics one of the world leaders in the manufacture of hydraulic equipment and a subsidiary of the Thorn Group of Companies.

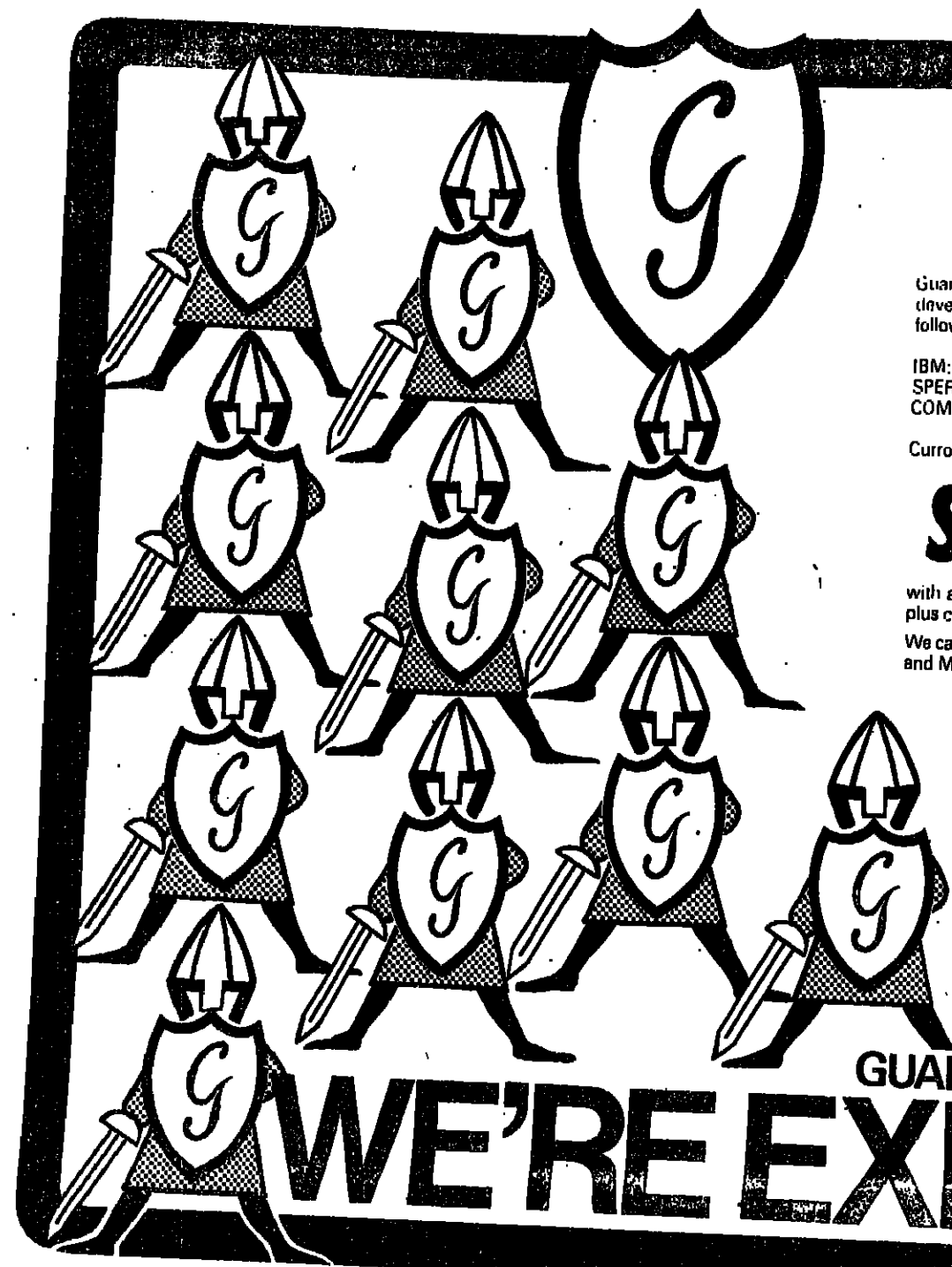
Our continuing search for improvement and efficiency in both home and overseas markets has necessitated the setting up of a computer department based on an IBM 3/15. Your task will be to head up the department and direct the staff of Analysts, Programmers and Operators. Major objectives include the introduction and improvement of systems, supervising programming for new applications, liaising with senior management, IBM and Thorn Group computer management and making recommendations on all hardware and software for future developments.

The job has wide ranging responsibilities and calls for you to be not only a highly experienced Analyst but also a capable manager.

The rewards offered include an attractive negotiable salary and a comprehensive big company benefits package which includes full relocation expenses as necessary.

To find out more write with full background details to Peter Sutcliffe, Personnel Manager, Towler Hydraulics Ltd., Oaklands Road, Rodley, Leeds.

TOWLER



**YES WE ARE EXPANDING
AND WE NEED YOUR HELP!**

Guardian Computer Services is a software house employing over 30 computer specialists developing tailor-made, commercial on-line systems in a project environment on the following hardware:

IBM: System/32, System/34, System/38, Series 1 and 4, 110
SPERRY UNIVAC BC/7
COMPUTER TECHNOLOGY (CTL) ROUNDRANGE

Currently we are offering positions to:

SYSTEMS ANALYSTS

with at least two years' analysis experience on any disc-based mainframe or minicomputer, plus concurrent or previous programming experience.

We can offer you the chance to widen your analysis capabilities and obtain Project Leadership and Management experience in the first-time user environment.

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Telephone 061-737 7352.

GUARDIAN COMPUTER SERVICES LTD

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PROJECT LEADER

Surrey

to £7500 + Car

A unique opportunity with a long established bureau/software house has arisen due to expansion. The company seek a programmer with at least five years' in depth experience of System 10 and its software to assume the position of Project Leader.

The ideal applicant will be expected to contribute their experience to projects being designed and developed on the System 10. You will also be expected to write programs if necessary, and advise others about programming. The company offer an excellent salary with the added advantage of a company car.

Reference HK28/1

BASIC + / BASIC + 2 PROGRAMMERS

Central London

to c£8000

A small but rapidly expanding Software House are currently seeking programmers with a minimum of 18 months' BASIC + or 12 months' BASIC + 2.

The company have PDP 11/34 in House and all major developments utilise the hardware. A wide range of applications are currently being designed, mainly in the commercial area.

They offer a very good career path moving if so desired into Analysis or Systems programming at an early stage.

The company offer an excellent salary plus all the fringe benefits you would expect from a dynamic and growing company.

Reference HK28/3

COMMERCIAL ANALYST

Central London

to c£8500

One of the leading Systems Houses in London currently require a Commercial Analyst with the minimum of 2 years' Analytical experience.

Most of the work undertaken by this company is on Mini's, so some knowledge of Mini's is desirable but not essential.

The ideal applicant would have already designed one major system from feasibility to implementation in a commercial area.

The company offer an excellent salary and the career path is naturally self generated.

01-439 7871

Reference HK28/5

BURROUGHS COBOL PROGRAMMERS

City

c£6,500 + 3% Mortgage

A merchant bank operating a large Burroughs installation including a mainframe and several minis is seeking several cobol programmers with good experience to develop into analysis work.

You will be of interest if you have eighteen months or more COBOL experience and are self motivated without the need for close supervision.

The company offers an excellent salary together with very good fringe benefits including a superb staff restaurant, L.V.s, Christmas bonus, etc.

Reference BP28/2

JUNIOR SYSTEMS ANALYST

City

c£6,500 + Mortgage

A major financial organisation operating an ICL 1900 installation which will be updated to an ICL 2960 by the end of the year, is seeking a Junior Systems Analyst who is looking to expand on their current experience.

The minimum requirement is 18 months' systems experience gained on any hardware. A programming background would be useful although not essential.

The company offers a very good starting salary together with extremely good fringe benefits including a 4% MORTGAGE, BONUS, FREE LUNCH, season ticket loans, non-contributory pension etc.

Reference BP28/4

PL1 OR ASSEMBLER PROGRAMMERS

N. London

to c£7000

A large manufacturing COMPANY OPERATING AN IBM 370/138 requires a number of programmers to expand their Data Processing department, which is undergoing a major development scheme.

The minimum requirement is twelve months' experience, although the vacancies cover a range of positions and expertise.

The company offers a very good starting salary together with the usual fringe benefits one would expect of an organisation of this size.

01-439 7871

Reference BP28/6

JBA**Prestel/Viewdata Specialists**

Germany

from £20,000

Immediate vacancies exist for consultants who have considerable experience of information transmission systems, such as Prestel, Viewdata, etc. Data communications expertise and database knowledge is vital to the positions. A user contact background is desirable.

Our client is one of the largest consultancy organisations in the world with over 3,000 employees. On this solid foundation, the company offer real up-market remuneration packages and excellent relocation assistance. Further, the prospects of continuation of projects at very senior levels in a worldwide market place is virtually second to none.

Contact: Mike Creamer

Data Base Consultants

London based

neg. to £12,000

Applications are invited from Senior Data Base Specialists with a wide computing and business background to join a leading consultancy. Candidates should have experience of special analysis and design methods appropriate to the data base approach, have worked with at least one of the proprietary systems and be able to compare the different types of solutions available. Appointees will be required to work on a variety of client projects, ranging from advising on feasibility through to the detailed design and implementation of specific applications. The ability to work in a sophisticated environment, coupled with the drive, personality and technical expertise to communicate on the same level as senior managers is of paramount importance.

Contact: Margaret Stevens

Systems Programmers

Munich

DM 65,000 - 90,000 + benefits

Permanent positions are available with one of Germany's leading hardware manufacturers, for experienced IBM Systems Programmers who possess a minimum of 3 years' experience. DOS/VS, CICS, POWER/VS (or any other type of spooler) expertise is of most interest, although OS or MVS could also be of considerable value. All successful candidates will receive full relocation expenses, including agents fees, an initial family separation allowance and a minimum of 6 weeks holiday per year (plus all statutory holidays). German lessons will be provided.

Contact: Andy Wright

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W.1. Tel: 01-491 4478

Software Specialists

Home Counties

up to £9,000 + bonus

A major software house, with an impressive growth record, is continuing to expand and currently has vacancies for Programmers and Designers to work on the development of middleware associated with established operating systems.

Candidates should have at least 3 years' experience working on software such as OS, DOS, VME, 11/K, communications or networks. A background of implementing large mainframe systems, perhaps with a manufacturer would be an advantage.

Excellent salaries, relocation assistance and profit sharing scheme.

Contact: Jim Baker

Technical Analyst

Bracknell

neg. £7,000 - £8,000

This is an outstanding opportunity to join a successful British Air Freight Forwarding Company, to help consolidate and expand the operation of its relatively small d.p. function, both here and overseas. The company runs a worldwide network of minis, so although specific hardware experience is not required, candidates must have a thorough understanding of the concepts and possibilities of network processing. A sound knowledge of accounting/financial applications is, however, essential and must be combined with the ability to work at a detailed technical level.

Company benefits include an excellent pension scheme plus medical and life assurance - generous relocation expenses can also be made available. Two salary reviews per year can be expected.

Contact: Andy Wright

Programmers & Analysts

South of England

up to £6,000 + mortgage subsidy + benefits

One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future.

Programmers must have at least 18 months' COBOL experience in a batch or real-time environment. Analysts should have real-time commercial or accounting applications experience. First class location, outstanding employment package and a realistic career growth. Call for more details.

Contact: Mike Creamer

A chance to combine your problem-solving skills and technical expertise

with CTL, one of Britain's largest independent business computer manufacturers, responsible for the successful 8000 Series Systems. We are growing fast and have a number of opportunities on the support side of our Customer Services Division:

PRODUCT SPECIALIST - HARDWARE

up to £7K + car allowance*

to become our Technical Specialist on current products, provide cost effective servicing policies and liaise closely with the Marketing and Design divisions on the development of new products.

Candidates, HNC or degree level, should ideally have up to 5 years' hardware products experience, including peripherals and support in a service/design environment. Knowledge of programming, microprocessing and appreciation of systems software is essential.

SUPPORT ENGINEER - SOFTWARE

up to £6K + car allowance*

to act in a Project Manager role for systems implementation, and then to monitor and advise on the use of the operating systems and applications software. There will be considerable technical contact both with customers and our own engineers.

Candidates, HND or degree level, will have a minimum of 2 years' experience in a computer or associated industry in the implementation and application of software systems.

JUNIOR SOFTWARE SUPPORT ENGINEER £4.5K - £5.5K + car allowance*

to be responsible for activities relating to the provision of systems support to the customer base and our field engineering staff, including involvement with product development, performance and testing exercises and specific monitoring of customer situations on site.

This career opportunity would ideally suit an HND student or someone with at least 1 year's experience in support/design software environment or computer operations.

All posts, based at Hemel Hempstead, are open to men and women, and offer a real opportunity to join a fast-growing British computer company developing mini-computer systems in software and hardware.

Salaries are negotiable according to experience and will also include a car allowance of £950 p.a. Excellent company benefits and career prospects.

Please write, or telephone, for further details/application form to Jim Parle, Personnel Officer, Computer Technology Ltd., Eaton Road, Hemel Hempstead, Herts. HP2 7EQ. Tel: (0442) 3272.

CTL
The British Computer Systems and Software Company

CURRENT REQUIREMENTS ALL IMMINENT STARTS AND GOOD RATES

ICL 1900/32 System 10	Luton Luton Berk	IBM US VS1 VM US VS1 VM System 3	Heathrow Luton Luton
HONEYWELL H8000 H8000	Home Counties Home Counties	MINI PDP 11 Data General Nova	G. London G. London

OTHER REQUIREMENTS: If you have 18 months' minimum experience on any hardware, CALL US NOW for more details of these and dozens of other assignments.

**VLI House, 68-69 St. Martin's Lane
London WC2 4JS**

VLI group

Co-Operatives

01-439 7871

Full-time PROGRAMMER for International Research into Dialysis and Kidney Transplantation.

The European Dialysis and Transplant Association requires a programmer with initiative and experience in FORTRAN and ALGOL to work at U.K. Transplant, Southmead Hospital, Bristol. An in-house DEC PDP11/34 and South Western Universities computer network is used. Salary in the range of £4,421 to £5,326 depending on age and experience. Superannuation as for an NHS appointment.

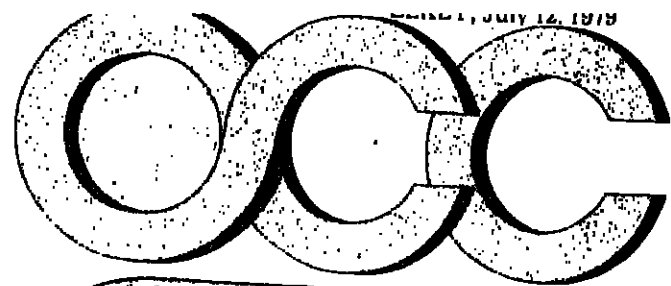
Applications to Dr. A. J. Wing, EDTA, St. Thomas' Hospital, London, S.E.1. (Telephone: 01-633 0836) from whom a full job description is available.

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

Job Vacancies



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MANUFACTURING

£210,000 - £13,000 p.a.

Our clients are about to build a hardware team to work on the design and development of a new and important computer sub-system. The Project Manager will have a key position, being initially responsible for setting up a team of hardware engineers and eventually taking responsibility for the planning and progress control of the project within the shortest possible timescale. In addition to the management and technical supervision of the hardware team the manager will work in close association with the software teams and will need to communicate with top executives.

We are looking for an experienced Project Manager who has had team responsibility as well as involvement in a major hardware project from design to implementation. This should preferably be in computer design with an essential engineering background of the highest standard in a related field.

This is a first-class opportunity to lead a challenging project within a company offering first-class advancement in an expanding organisation. Ref. 515/CW/Renee Nute.

Please ring Renee Nute on 01-242 9356 or write to the address quoted. If it would be more convenient to telephone in the evening or during the weekend please ring 01-874 6372.

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB



INFLUENCE THE DEVELOPMENT OF COMPUTING IN THE NORTH-WEST THAMES REGIONAL HEALTH AUTHORITY

SYSTEMS DEVELOPMENT OFFICER

SALARY SCALE £7,308-£8,777 p.a. (Pay award pending) (including London Weighting)

A vacancy exists for a Systems Development Officer, accountable to the Regional Computing Services Officer for the development of systems for the Regional Health Authority and Area Health Authorities within the Region, which covers Bedfordshire, Hertfordshire and Districts in North and West London. We are currently reviewing our computer policy and the person appointed will have an influence on the future strategy for computing development. Sound managerial experience is essential as is the ability to have with staff in all disciplines and at all levels.

A large ICL 1904S is installed in a new building in North London (near From Barnet Town Hall). Application forms and further particulars from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR (Telephone No. 01-262 8011, Ext. 281), returnable by 12th July 1979, quoting reference number 510/CW/12-7. Applicants from outside the service commence at the minimum of the scale.



ROBERT GORDON'S INSTITUTE OF TECHNOLOGY, ABERDEEN

MANAGER OF COMPUTER SERVICES

To control and develop the Institute's Computer Services including enhanced DEC 20 system.

Salary £10,317 per annum.

ASSISTANT MANAGER

Salary £7,233 per annum. Assistance with removal expenses.

Details from: Chief Administrative Officer Robert Gordon's Institute of Technology Schoolhill ABERDEEN AB9 1FR

UNIVERSITY OF LIVERPOOL Department of Physics

EXPERIMENTAL OR SENIOR EXPERIMENTAL OFFICERS

To collaborate in the design and construction of a Recol Separator which will be used to analyse particle beams according to their velocity and mass. The Recol Separator will be at the S.R.C. Laboratory at Daresbury in Cheshire.

(a) E.O./S.E.O. (Hardware): To design and commission devices for signal acquisition and signal conditioning to interface to a control computer.

(b) E.O./S.E.O. (Software): To write programmes for control and running of the Recol Separator in real time.

The successful applicants, who will work primarily at Daresbury, will have a graduate (or equivalent) qualification and at least two years' relevant experience. The post is available for a period of two years. Salary, according to age and experience, on the scale for Experimental Officers (up to £10,000 p.a.) or Senior Experimental Officers (up to £14,500 p.a.).

Application forms may be obtained from The Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Quota Ref: RV/686 B/c/B.

Cleveland Area Health Authority
Middlesbrough General Hospital

Electronic and Bio-Medical Equipment Technician

A SENIOR ELECTRONIC TECHNICIAN is required to work with and be part of an existing team of technicians involved in the maintenance of a wide range of electronic and bio-medical equipment in the District.

The successful candidate, who will be responsible to the Chief Electronics Technician, will need to have been engaged on the more advanced work of the electronics workshop with experience of electronics in the computer field being a decided advantage.

Applicants must possess a minimum qualification of O.N.C., H.N.C. or H.N.D. or equivalent in Electrical/Electronic Engineering.

This appointment furnishes the ideal opportunity for a person with high skill and ability in electronics maintenance to expand their knowledge into the interesting field of Bio-medical equipment which includes brain and whole body scanning equipment.

Whitley Council conditions for B.T.B. Staff apply. Hours of duty normally 38 per week. Facilities for further education and training available.

Salary Scale: £3,744 to £1,788 p.a. (Medical Physics Technician III)

Application form from District Administrator, District Offices, Pools Hospital, Nunthorpe, Middlesbrough, to be returned by 10th August, 1979.

South Tees Health District

Forward Trust Limited, a leading finance house and member of the Midland Bank Group, wish to supplement their management services function by the appointment of experienced computer persons.

Business Analysts

£6,500-£8,500 p.a.

Candidates will require several years commercial systems experience. They will lead and control teams investigating business problems, specifying solutions in non-technical terms.

Analytical and evaluative skills, together with a capacity for creative thinking, are essential.

Senior Systems Analysts

£5,500-£7,300 p.a.

Candidates will have a minimum of 3 years' systems analysis and design experience with proven involvement in all aspects of analyst work. A programming background will be preferred and potential for career progression to Business Analysts essential.

Forward Trust are currently reviewing the total company approach to computing, leading to a planned installation of a network of terminals by the end of 1980. This network will be supported from the head office at Birmingham and in line will lead to re-design of the existing batch systems on to a company database. Experience in On-Line networks, telecommunications and database techniques will, therefore, be an advantage in applying for the above positions.

Commencing salaries for the above positions are negotiable, according to experience. Established staff are eligible to apply for staff loans at preferential rates of interest and there is a non-contributory pension scheme plus the security of being associated with a major banking group.

Candidates, male/female, should telephone or write for an application form to:

Anne Finney,

Forward Trust Limited

12 Colthorpe Road, Edgbaston, Birmingham B15 1QZ. Tel: 021-484 6141 ext. 247.

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SALES EXECUTIVES: LONDON/HOME COUNTIES

NATIONAL ACCOUNT EXECUTIVE On quota c£20K + car

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Reorganisation in the marketing and sales force has identified a need to recruit key personnel, where experience, proven success and commitment will be well rewarded by exceptionally high earnings. These positions will require knowledge and experience of selling mini computer and/or word processing systems, and where applicants can demonstrate the ability to sell with a proven track record.

The National Account and OEM Sales Executive positions will require applicants with the appropriate skills in the respective areas. In both instances applicants should have previously negotiated with Chief Executives and senior management and ideally be used to UK responsibility in the assigned areas.

Contact: Cathy Tracey on: 021-236 3781 (24 hour answering service).

TELECOMMUNICATIONS SPECIALIST RICHMOND BASED

c£10,000 + car

A key and vital position within the UK support group is that of Telecommunications Specialist. It will require you to have detailed understanding of IBM systems software and telecommunications - which could include 3270 protocol, TP monitors, SDLC and TSO. Your function will be providing advice on the communications associated with the 2200, VS and word processing range of products. You should have an ASSEMBLER level language capability coupled with extensive communications and software experience.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

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c£8,000 + car

As a member of the UK systems support group your primary responsibility will be that of evaluating application packages and liaising between third party software vendors and the Wang customer base. Basic job functions will include technical appraisal, support, software training and the distribution of information to the marketing team.

This is a key national role within Wang and will require you to have extensive business experience and an in-depth knowledge of application software, ideally gained in an IBM environment. The successful applicant would have leadership skills and be fluent in COBOL.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

FIELD SERVICE ENGINEERS c£5,500 + car + overtime BASED NW1

We have been asked to identify experienced Field Service Engineers or candidates who have previous experience in the communications industry and a preparedness to undertake comprehensive training. Yours will be the responsibility to support either the 2200 VS range of equipment or the word processing systems, where you will have a minimum of six months experience of mainframe, mini or word processing equipment maintenance and knowledge of the associated peripheral devices to board level repair.

In both instances you should be capable of logical thought, be self motivated and prepared to take responsibility for the service and support at a client base in a geographical zone. Your responsibility will span installation, fault diagnosis and repair-replace to component level.

Contact: Valerie Hall on: 01-935 0671 (24 hour answering service).

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TO £8,000 + car

Working from a branch office and in the sales environment you will be responsible for pre- and post-sales support on the 2200 VS equipment range. Your activities will span technical proposal submission, negotiations, demonstration, project development and team control to the full implementation of the computer systems.

The successful applicant will have a sound knowledge of IBM OS/VS software, COBOL and/or ASSEMBLER languages combined with a sales empathy. A distinct advantage would be that of a previous background with a manufacturer or service organisation.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).



Specialist Computer Recruitment Ltd

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A software background with a mini manufacturer would be ideal, although large mainframe and teleprocessing knowledge would be entirely acceptable. You will be working in a sales support environment and it is essential that you are capable of dealing with customers and discussing with them their software problems. There will be considerable technical content to this position and you will be expected to handle all new software releases. Initial training will take place at the manufacturer's U.K. premises and will involve both formal lectures and practical experience in one of their departments.

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DEPARTMENT OF
COMPUTING SCIENCE

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Salary on scale £4,232-£6,232 per annum (under review) appropriate to the post.

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THE UNIVERSITY OF
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You should have at least one year's experience of IBM equipment, plus a knowledge of PL/I or Assembler.

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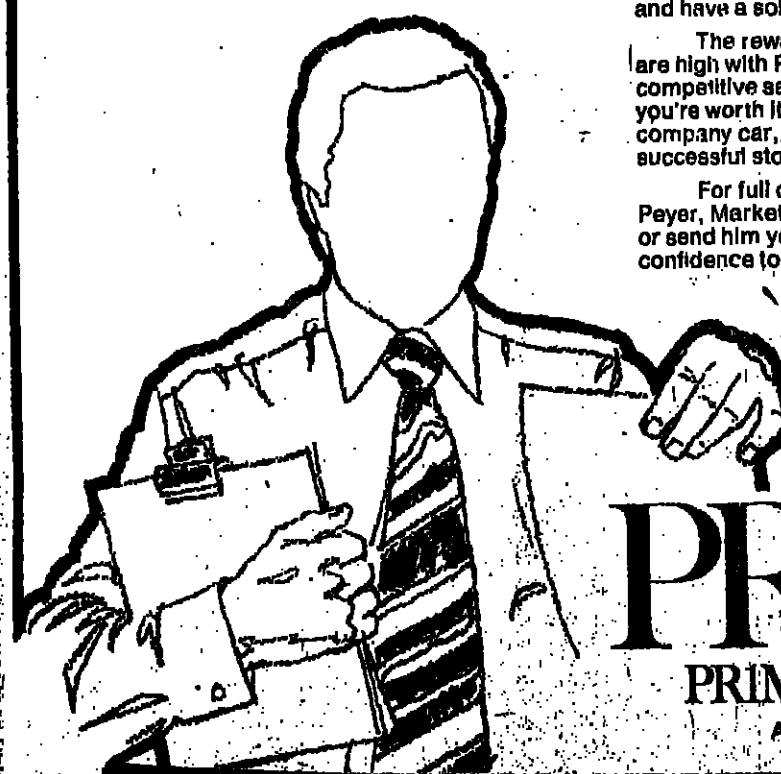
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You will be engaged on complex multi-processor, real-time software applications and utilise such minicomputers as the DEC PDP11.

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Responsibility for total project management, system design and customer liaison.

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As with most successful organisations, extensive dependance is put on the speed and accuracy of information made available to support company policies and decisions.

The successful applicant, with at least EIGHTEEN MONTHS' COBOL programming experience gained in a commercial environment, will work closely in a small and friendly installation where being a member of a small team will give you the opportunity of gaining total system involvement and the possibility of gradually exercising your own analytical potential.

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Remuneration to £9,500 plus car

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Responsible to the Manager of Training Sales, the consultant will sell and support the company's training services through direct contact with DP management and training staff. The role involves identifying training needs and developing career structured training programmes with client companies.

Sales experience, preferably within the DP services industry, together with good communication skills and a readiness to learn are all important requisites for a role with excellent prospects for wider responsibilities in a successful, growing company.

The importance of the post is reflected in a remuneration package including salary, car and company benefits scheme.

Please write or telephone for more details and a Personal History form to Stephen Helms or Derek Potts, Training Division, quoting reference G740, at the address below. Applications are invited from either men or women.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone: 01-633 0866



SENIOR PROGRAMMER

We are an engineering company committed to a programme of forward planning and development. In preparation for the installation, in early 1980, of a new Univac 90/25 with 3 x 8416 disc drives and V.D.U.'s which will replace a Univac 9300 we wish to appoint a Senior Programmer with a minimum of three years' commercial programming experience in ASSEMBLER (Univac or IBM) and/or COBOL.

Familiarity with on-line programming techniques would be advantageous but is not essential.

If you're the type of person who enjoys improving and up-dating systems, capable of working without supervision you can expect to assume full responsibility for the development and maintenance of our computer systems very quickly.

Interested? Then write in confidence to our Personnel Director, or if you prefer, telephone our Personnel Department on Walsall 26581.

Barton Conduits Limited,
Old Birchills, Off Green Lane,
Walsall, West Midlands.

BARTON

EDINBURGH REGIONAL COMPUTING CENTRE COMPUTING OFFICERS

The Centre has two vacancies (one part-time) in its Advisory Service for Assistant Computing Officers or Computing Officers.

Currently the main computing services offered to users in Edinburgh University and the Research Council Institutes in Edinburgh Area are based on the Edinburgh Multi-Access system which runs on both ICL 4.75 and ICL 2970 installations. An ICL 2980 (which also provides a service to Glasgow and Strathclyde Universities) at present runs under VME/B but will change to EMAS in the coming year. In addition, RJE Access is offered to IBM OS/MTV MVS services at Newcastle and Cambridge, and to CDC 7600 facilities at Manchester.

The Advisory Service is a focal point within the Centre where users can raise queries regarding use of those and other systems, and successful applicants will join the team of advisors (after initial training) as part of their duties. The full-time post will also involve a substantial assignment in one of a number of areas such as support to the Centre's use of external services, support to some of the Centre's own system software or consultancy on selected applications packages. The part-time post will involve a similar assignment but also involve a limited amount of other work besides advising.

Applications are invited from graduates with some computing experience either during or since their degree course. Depending on the extent and relevance of this experience, initial placement would be on the Assistant Computing Officer grade (L3/75-15488) or Computing Officer grade (L3/75-15488) or Computing Officer grade (L3/75-15488) or Computing Officer grade (L3/75-15488). The US pension scheme is restricted. For an application form and further details contact (quoting reference 7015) The Secretary, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 8YJ. If whom completed applications should be returned by 31st July 1979.

LEEDS CITY COUNCIL DEPARTMENT OF ADMINISTRATION COMPUTER SERVICES DIVISION

The Council currently operates a large ICL 1904S with a variety of computer terminals (including mini-computers) and a wide range of computer applications running under the GEORGE 3 operating system. Consideration is being given to the replacement of the ICL 1904S and evaluation of alternative equipment is in hand. The following vacancies exist in the Development Branch:

SOFTWARE ANALYST PROGRAMMER

S01/2 - £5232 to £6080 p.a. (inclusive)
(pay award pending)

Applicants should have at least three years' COBOL and/or PLAN programming experience on an ICL 1900 computer under GEORGE 3 and preferably knowledge of ICL utilities, Communications Manager Software and Operating System maintenance. Experience of programming staff supervision and training is also desirable.

SOFTWARE PROGRAMMER

T1/5 - up to £5073 p.a. (inclusive)
(pay award pending)

Applicants should have two years' experience of COBOL, PLAN, FMD 2, GEORGE 3 and/or Communications Manager.

Applications in writing to: Personnel Officer, Department of Administration, Room 306, Civic Hall, Leeds LS1 1UR.

CLOSING DATE: 14 days after appearance of advert.

LEEDS



Police Headquarters, Lewes

SYSTEMS ANALYST

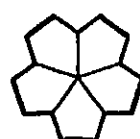
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This is an unusual opportunity to come to the ground floor of an entirely new venture; you will be expected to make a full contribution in the field of statistical models and in the analysis and application of data to the requirements of the police.

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Please call me, **GEOFF MARSH**, on 01-499 4501 to arrange an early meeting.

REF RW 28/3

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REF. 28/2

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FOR NCR'S IMPORTANT
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2. NCR was one of the earliest users of Micro-Processor technology and is, therefore, one of the most experienced.
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NCR Dundee is rapidly becoming established as an important centre of original software development for NCR worldwide. Current projects include a block-structured language compiler and control software for specialized self-service terminals. Others are planned, and there is a continuing dialogue between Dundee and other NCR development centres around the world.

There are several vacancies, all brought about by new product development. For graduates with up to 5 years' experience, salaries are very competitive (i.e. to £7000) and are currently under review. Conditions of employment generally are excellent and a generous relocation package is offered where appropriate.

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47/48 New Bond Street (entrance in Maddox Street) London W1Y 0HE Telephone 01-499 4501

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The company are one of the leading manufacturers and suppliers of medical life support systems and are an extremely successful division of one of the largest public companies within the UK. They have recently ordered an IBM System 34, due for delivery in March, 1980, with the intention of utilising the IBM MAPICS packages to interface in the development of an on-line order processing system and management information reporting.

Ideally applicants should be able to offer a minimum three years' data processing experience where they have developed commercial/financial systems using RPGII and have progressed in systems analysis. It is envisaged that the successful candidate will assume project leading responsibilities and contribute in the initial planning stages of future systems.

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£1821/£4832 p.a. inclusive

In place in the operation of a large PRIME 400 computer installation and to develop computer programs for the various applications areas within the department.

The installation consists of a 640K byte PRIME 400 Computer with three on-line disc drives, two magnetic tape units, line printer and two line printers. Users have access to the computer via VDU's located in the design offices.

Preference will be given to applicants possessing experience in both computer operations and FORTRAN programming, although training will be available for less experienced staff.

Applications by letter giving all relevant details including age, qualifications, experience and two references to the County Personnel Officer, County Hall, Manchester M60 3HP by 28th July. If possible, please include a telephone number where you may be contacted.

WESTFIELD COLLEGE
(University of London)

CASE Studentship
with INMOS in
MICROPROCESSOR
DESIGN

Applications are invited from those who have for or expect shortly to have a Science or related degree. The successful applicant, who will be expected to register for a PhD, will divide his time between the University and the Bristol laboratories of INMOS.

The research goals are not merely to design a microprocessor, but also to develop relevant simulation techniques and study the design-simulation cycle.

Applicants should write or phone Dr. Peter Omon, Computer Science Department, Westfield College, Kidderpore Avenue, Hemel Hempstead, London, W.V.3 0J1-436 7141.

Deputy Supervisor -Software

Switzerland

An important international bank is urgently seeking a capable systems man for its newly-installed centralised computer system.

Based in Switzerland, he will be deputy to the software Supervisor and be responsible for software systems in connection with the 370/148 VM centre, with VM370, DOS/VSE, CICS, RJE, Power and VTAM.

The right man will have had at least four years' systems programming experience, one year of which should

have been in the capacity of senior or deputy. A good knowledge of on-line systems, JCL and work control procedures, as well as an excellent insight into software applications is essential. With English as his mother tongue, he should also have a working knowledge of German. This is a responsible position with career prospects, and salary and other conditions are excellent. Please write, in strict confidence sending a Curriculum Vitae to:

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**Computer
Operator**
Ref. 248

**Senior
Computer
Operator**
Ref. 249

We have recently installed three new multi-access computer systems to support over 200 simultaneous terminals and have two vacancies in our operations team which works on a three-shift basis. Although preference will be given to candidates with experience of DEC equipment for the senior post, the essential requirement for both posts is a sound background in computer operations.

The computers (a DEC 1091, DEC 3020 and PDP 11-70) will be housed in a new building which has excellent staff facilities.

Salaries:
Senior Operator: £4442-£4927 (bar) — £5495 (AP 1/2)
Operator: £3379-£3912 (bar) — £4347 (Clerical 1, AP 1/2) inclusive of shift and other allowances.

Trainees may be appointed at a lower salary. For further details and an informal discussion ring Gordon Brand on Hatfield 68100 Ext. 472, or write to the Staffing Officer, The Hatfield Polytechnic, P.O. Box 109, Hatfield, Herts. AL10 9AB.

Closing date for applications: 27.7.79.

Applications are invited from those who have for or expect shortly to have a Science or related degree. The successful applicant, who will be expected to register for a PhD, will divide his time between the University and the Bristol laboratories of INMOS.

The research goals are not merely to design a microprocessor, but also to develop relevant simulation techniques and study the design-simulation cycle.

Applicants should write or phone Dr. Peter Omon, Computer Science Department, Westfield College, Kidderpore Avenue, Hemel Hempstead, London, W.V.3 0J1-436 7141.

Graduate plus two years?

If you have two years' computing experience now is the time to acquire some microprocessor expertise.

At Marconi Avionics we provide training in design techniques and CORAL. At plants in Borehamwood, Welwyn Garden City and Radlett, all in Hertfordshire, we are writing software for TEXAS, MOTOROLA and INTERSIL microprocessors and we need programmers and engineers for several small projects.

So if you are a graduate with two years' programming or hardware experience and are interested in working

with microprocessors please ring Chris Hill on 01-953 2030 ext. 3449. Alternatively write to him at Marconi Avionics Limited, Elstree Way, Borehamwood, Hertfordshire, or call 01-207 3455 (Day or Night), and we'll send you more information. Please quote reference MA79105. These posts are open to both men and women.

**MARCONI
AVIONICS**
A GEC-Marconi Electronics Company

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Stone & Webster Engineering Ltd. are part of a multi-million Corporation supplying engineering expertise mainly to the petrochemical and process industries. We are situated in new offices in the Gray's Inn Road.

We have a HARRIS 1255 computer with 500K byte MOS Memory under VULCAN 6 virtual operating system for batch and timesharing processing. We are looking for an analyst/programmer to join our commercial development team who are designing and writing an integrated corporate accounting system using direct data entry and interactive processing. Program development is in timesharing mode using ANSI 74 COBOL.

Applicants should have at least 3 years' analyst/programmer experience with COBOL. Experience with database management, transaction processing online systems and data entry would be an advantage, particularly if it has been in the areas of financial accounting, project planning and control management information systems.

The Salary offered is very attractive and fringe benefits include 4 weeks' vacation, LVS, pension scheme, service bonus, etc.

Please write or telephone Mr. J. G. Hudson,

STONE & WEBSTER ENGINEERING LIMITED,
STONE & WEBSTER HOUSE,
238 GRAY'S INN ROAD, LONDON WC1X 8HA.
TELEPHONE: 01-837 2855 EXT. 3709.

STONE & WEBSTER

OPERATIONS MANAGEMENT LUTON

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If you are currently working in a fairly senior capacity in operations (e.g. in a supervisory or managerial position), this new vacancy could represent an exceptional career move with excellent future prospects within the Group. In addition to the salary above, the Company offers substantial benefits, including assistance with relocation if necessary.

For more details about this job or the Company, please telephone Sharon Landau at SBS on 01-734 0562 (24hr), or write with a brief C.V. to the address below:

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SCIENTIFIC & BUSINESS SYSTEMS LTD

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North West, c. £7,500

A leading electrical engineering company, part of a major British group, seeks additional Senior Analysts and Programmers as part of its planned Data Processing expansion. These plans include the installation of new equipment and the development of real-time systems. Specific areas for development

are Order Processing, Production and Inventory Control and Management Accounting. Duties will also include the improvement of existing computer systems. Applicants will have had experience of developing computer systems in the areas specified and should preferably have managed a small project team.

C.G. Moores, Ref: 24189/CW Senior Analysts, Ref: 24190/CW Senior Programmers
These positions are open to male or female candidates. Please telephone in confidence for a Personal History Form to:-

MANCHESTER: 061-236 8981, Sun Life House, 3 Charlotte Street, M1 4HB.

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We have a major development programme which involves

- the implementation of a large branch terminal network using IBM 3600 equipment.
- the implementation of a database system
- the extension of local TP using 3270's

We need to enhance our existing team to ensure the success of this demanding programme and are thus able to offer a Programmer an exciting opportunity to extend his/her experience.

Applicants should have a minimum of two years' experience using PL/1 or Assembler. Preference will be given to applicants with experience using DL/1 database system or 3600 financial terminal equipment.

This appointment will be based in our Head Office in Bristol. A realistic salary, which is reviewed annually, will be offered, and there are attractive fringe benefits, which include a contributory Pension and Life Assurance scheme, assisted membership of BUPA/WPA and staff house purchase facilities.

Please write in the first instance with brief details of your age, qualifications and previous experience to: **The Personnel Manager, Bristol & West Building Society, P.O. Box 27, Broad Quay, Bristol BS99 7AX.**

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ANALYSTS
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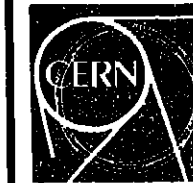
Check whether these features coincide with your objectives:

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Due to an expanding volume of work, our clients, a major bureau installation, have asked us to assist them to recruit Systems Analysts at several levels, ranging from Junior Analysts (say with two or three years in DP, including some analysis), to Senior Analysts, with appropriately heavier experience and team leadership capability. There are no specific applications or hardware requirements; the need is for presentable, well-educated DP professionals.

To learn more about these first-class career openings, ring us in confidence, quoting ref. 672CW or leave a message on our answering machine and we'll contact you.

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CERN, a European Research Laboratory situated near Geneva, has a vacancy for a

COMPUTER CONSOLE OPERATOR

in its central computer service. This is at present based upon CDC 7600, 6800, 6400 computers as well as IBM 370/168 and 3032 systems.

The post involves a shift work including weekends and public holidays.

Candidates should have successfully completed their education to at least GCE 'A' level or equivalent preferably including computer science or other scientific subjects. At least two years' experience of computer operation including some IBM experience is desirable. A knowledge of French would be useful.

For application forms, please write to: **Head of Personnel, CERN, 1211 Geneva 23, Switzerland** quoting the reference DD-CO-79/1

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Applications are invited from recent graduates or students graduating in 1979 for the post of Research Assistant to work in the field of parallel processing with microprocessors. Prospective candidates should hold or expect to obtain a good honours degree in any of the following disciplines: Electronics, Control Engineering, Computer Engineering or Mathematics.

Candidates will be expected to register for a higher degree, M.Phil./Ph.D. Telephone enquiries can be made to K. M. Abbott, Tel. 0191 76181. Salary for this post, which is tenable for two years from 1st September, 1979, with a possible extension up to three years, is £2,778 to £3,064 per annum (under review). An application form may be obtained from the Personnel Officer, Sunderland Polytechnic, Chester Road, Sunderland, SR1 3SD, and should be returned as soon as possible.

So you know all about Systems Software How about Computer Systems to Design Systems Software?

The brief for this job is to assist in the design and implementation of a methodology for the controlled evolution and maintenance of systems software.

The hardware centres on a major family of mainframe computers together with new systems currently under development. The location—Southern Germany.

We are looking for:-

Systems Designers

With at least three years relevant experience to work on the development of technical procedures for a system of computer aided design to be used on operating systems software.

Senior Programmers

With several years' experience of programming as part of a major project team. The job will be of particular interest to programmers with an interest in the development of systems software.

The main qualifications we require are experience and innovative ability.

The company—an international organisation based in Germany with a first class record in the business world and a reputation for using the skills and talents of their people with imagination and with commonsense.

Background—the people we require will have extensive experience of at least two of these languages—PLI, Cobol, Assembler, SPL.

To make a contribution to this project you will need a clear understanding of how systems software is developed at present and more to the point, how it should be developed in the future.

In return we can give you the satisfaction of working on the project which will produce the industry standard for systems software development in the '80's.

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The Country—Living in southern Germany can be a reward in itself. The cities offer an enjoyable way of life and the countryside is beautiful and unspoilt.

If you are interested in applying for a position working on this project please write in the first instance giving details of career to date and qualifications to:-

Altmann & Partner GmbH

or either:-
21, Mount Ephraim Rd., or Weissenportz,
Tunbridge Wells, Kent. 5203 Much, West Germany
0892-25702 010-49-2245-2824
Interviews will be arranged in London

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Systems Analyst c. £7,000
Programmer c. £5,000

This successful company are about to expand their existing management information system and require a systems analyst for the development work on this and future applications. Applicants should have at least 3 years' relevant experience preferably using ICL equipment and RPG II.

A rare opportunity for a programmer with a minimum of 18 months' experience, preferably using RPG II or ICL equipment, to join a small team in an expanding department.

Both positions offer excellent fringe benefits which include 5 weeks' annual holiday, pension and life assurance schemes and an active sports and social club.

Ref: CW 28/1.

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£3,452-£4,121 (Review pending) plus shift allowance of 10% (Candidates from outside the Health Service will commence at the minimum of the scale)

A vacancy exists for an experienced Computer Operator to join a team of operators working a two shift system covering two days per week.

The Authority operates an ICL 1904A with 128K core, 8 x ED560, 8 x 1800 bpi tape drive, 2 line printers, card reader, paper tape reader and communications.

Candidates should have experience of operating in a medium to large ICL installation using GEORGE 3.

Application forms and job description may be obtained from the Regional Personnel Officer, Yorkshire Regional Health Authority, Park Parade, Harrogate, North Yorkshire. Please quote Ref. No. 41.

Closing date 27 July 1979.

UNIVERSITY OF GLASGOW
COMPUTING SERVICE

PROGRAMMING ADVISOR

Applications are invited from candidates holding a university honours degree or equivalent for an appointment as Programming Advisor on Grade IA or II of the scales for Other Related academic staff, for which the salary scales as at October 1978 will range from £3,333-£7,821 and from £2,727-£6,492. The post is primarily concerned with the provision of advisory, consultancy and related information services associated with a large ICL 2974 computer which runs both batch-processing and interactive (MAC) work under the VME/8 operating system. A knowledge of at least two high level programming languages, together with experience of applications programming is required.

Further particulars may be obtained from the Secretary of the University Computing Service, University of Glasgow, Glasgow, G12 8QQ, with whom applications (in envelope, giving the names and addresses of three referees, should be lodged on or before 31st July 1979.

In reply please quote Ref No. 44776

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Candidates are unlikely to be earning less than £5,000 p.a. currently.

Please contact by phone or letter, Philip Bernard (Director) or Don Beverly (Group Head of Business and Industrial Research) at RBL.

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For full details, please contact Chris Hill, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. WD6 1RX or telephone him on 01-953 2030 ext. 3449 or call 01-207 3455 any time (day or night) and we'll send you more information.

MARCONI AVIONICS
A GEC Marconi Electronics Company

EXPERIENCED SENIOR COMPUTER OPERATOR

with some knowledge of communications hardware to be responsible as Communications Supervisor for monitoring the functioning of the Communications equipment and its associated with the Computer Centre's computers. Salary scale £3078-£3774 p.a.

Application form from Assistant Secretary, Personnel Office, University of Birmingham, P.O. Box 363, Birmingham B15 2TT. Ref. 880/C/192

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We have a whole list of excellent positions currently available throughout mainland Europe. Call No. below (reverse days) for full details.

OS-V8 Systems Programmer (long contracts £400 p.w.)
Service Engineers for Minis (Permanent job for good) **Dek specialists** (long contracts, excellent rates)

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Locations, Edinburgh/Glasgow and Manchester. Applicants should possess several years' experience of computer system field maintenance and be capable of working on own initiative. Experience of plotting equipment and/or mini-computers would be an advantage.

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This position is likely to prove attractive to an experienced computer field service engineer who has specialised in communications and now feels able to manage and support a small team responsible for a large, complex comms network, linking several large computer centres and associated terminal equipment.

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or phone 01-994 6477

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We're conveniently based on the outskirts of London, beside Cockfosters Underground Station. We'll pay salaries up to £8,000 and we'll relocate you where necessary.

Interested? Then telephone Jim Reynolds (Chief Programmer) on ext. 381 for more information. Alternatively, for an application form, write or telephone Frances Mason (Programmer Recruitment) at ITT Business Systems, Diversey House, Cockfosters Road, Cockfosters, Barnet, Herts. Telephone 01-440 4141 ext. 349.

ITT Business Systems

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PROGRAMMER

Salary £4200-£6,200 p.a. (under review)

The Central Electricity Generating Board invites applications for the post of Computer Programmer in the Station Control Room of the North Western Region Computer Branch. This team provides computing services to power stations throughout the Region. The person appointed would be based at Bramhall but would usually assist in the commissioning of the plant monitoring and control system at Heysham Power Station. This work would require some time to be spent at the station.

The Region has an ICL 1904S, to be replaced in 1980 by a 2960, with terminals at power stations. The monitoring installation at Heysham is based on Ferranti ARGUS 500 processors.

Applicants should preferably have a degree, or equivalent in a technical subject and have some experience in real time programming. Familiarity with ASTRAL, COBOL and FORTRAN would be advantageous.

Applications in writing from other sex stating age, experience etc. to the Personnel Manager, CEGB, N.W. Region, Europa House, Bird Hill Lane, Cheshire Heath, Stockport SK3 0XA to arrive not later than 25 July 1979. Please quote reference number 430/CW.

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A CODE OF CONDUCT FOR

PROFESSIONAL SALESMEN—PART 2

Dangers of sub-contracting

LAST week we started a three part article based on the creation of a code of conduct for professional salesmen. Here is another set of "10 commandments" for your analysis and criticism. 1. The salesman will not sub-contract any part of his selling responsibility to any agent or third party without the expressed authority of his employer.

2. The salesman will inform the client of any intention to sub-contract any part of the responsibility for producing/supplying the product or service being sold and state precisely what control he and his company will have over quality and reliability. He will ensure that any sub-contractors will be well known and proven practitioners.

3. The salesman will not in any circumstances allow himself to become party to any form of sharp practice or the use of any selling technique which will serve to mislead or take advantage of the client.

4. The salesman will not in any circumstances become involved in any form of price fixing or deception. This includes market sharing arrangements, falsifying tenders, deliberately under-quoting — in terms of price of product capacity — and the commission of additional costs in the form of related supplies, labour, electricity, construction, installation, licences, delivery, maintenance, environmental control, fuel, packaging, etc.

5. The salesman will not in any way denigrate the character of his company, his company's competitors or any fellow professional.

6. The salesman will not maliciously or recklessly injure or attempt to injure, directly or indirectly, the professional reputation, prospect or business of others by any action he might take.

7. The salesman will not exploit his relationship with any client by using the existence of any past or present business as a means of advertising or publicity without the expressed authority of the client concerned.

8. The salesman will ensure that any reference sales are totally valid in the context of the product being sold to the client and that such indirect recommendations are made with the full consent of the

referenced client concerned.

That's all for this week. I hope by the time this is finished in one week from now you will have generated some ideas of your own on what a code of conduct for salesmen should look like.

TRADER

Readers are invited to comment on the subjects discussed in Sales Bit, or to write about their own experiences in the market place. Letters should be addressed to: Trader, Computer Weekly, Dorset House, Stamford Street, London, SE1 9LU.

Extra branches

NEW offices in London and Edinburgh have been set up by Redfern Computers. In London, central accounts, financial and government branches are at Holborn Hall, 100 Gray's Inn Road, WC1X 8AJ. Tel: 01-401 0086. The Scottish branch is at Orchard, 100, Mary House, 30 Queensferry Road, Edinburgh, EH4 3HA. Tel: 011-342 1310.

Disc care

ADVICE on disc care, from initial unpacking to storage labelling and preventive maintenance is contained in a brochure produced by Eastern Copies. It can be had from Frank Skinner, 112, sales manager of Masima, 14, Elton, Mary House, The Ring, New Road, Belspring, RG12 1E1.

Distributors

REPORTS and publications produced by Auerbach are now being distributed in the UK by Computer Aid for Management Ltd., 32-36 Great Portland Street, London W1. Tel: 01-437 3691.

Video booklet

FOLLOWING the launch of its Visiopak modular CRT electronic system, video monitor specialists Digivision has prepared a booklet, "How to use your Visiopak", for the benefit of those users whose familiarity with TV-type circuitry is limited. Copies are free to existing users and to others from Digivision Ltd (CW), 82 Cannon Street, Leicester, LE1 7ahr.

Modem

BORER has added to its range of UK built modems a synchronous, 9,600 bps device, which automatically adjusts to line characteristics in two seconds. With a basic price of around £4,000, the 98 LSI can be used on leased lines or on the public switched network and can fall back to half speed on bad lines.

An add-on printed circuit board, based on a Texas Instruments 4 bit bit-slice processor and US custom MOS LSI, enables four channels to be multiplexed on to one line using bit-interleaved time division techniques.

Puzzle Answer
THE order doesn't matter, but the shape does. To maximise the area enclosed the four corners should all be on the same circle. This will make the quadrilateral cyclic, with opposite angles totalling 180°. In these circumstances the plot will be precisely 1/2 x 4 x 4 x 8, for 12 square furlongs.

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The closing date for receipt of applications is 25th July, 1979.

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A negotiable salary in the Senior Lecturer range will be offered, plus a pension and other benefits.

Further particulars may be obtained from the Deputy Director, Professor G. D. S. H. or telephone 021-616 71281, extension 422. Applications from men and women are invited, and all enquiries should be sent to the same address as above.

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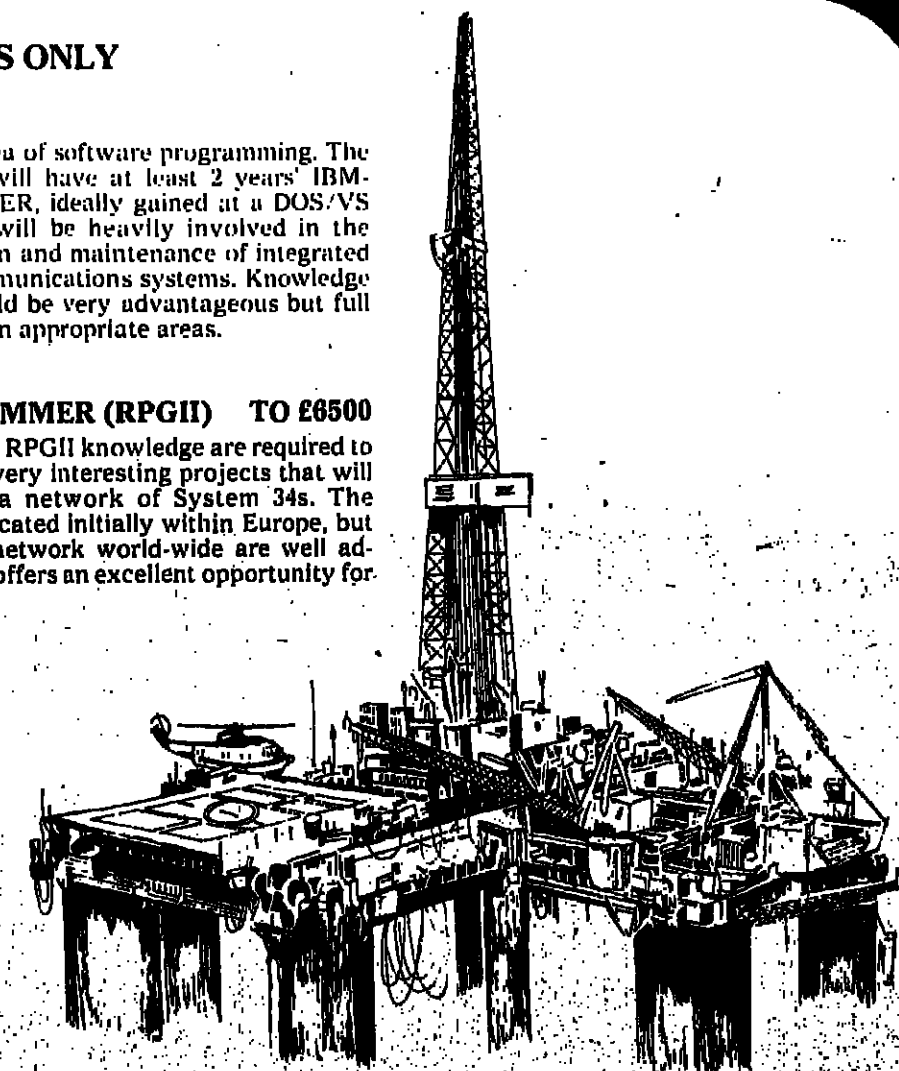
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